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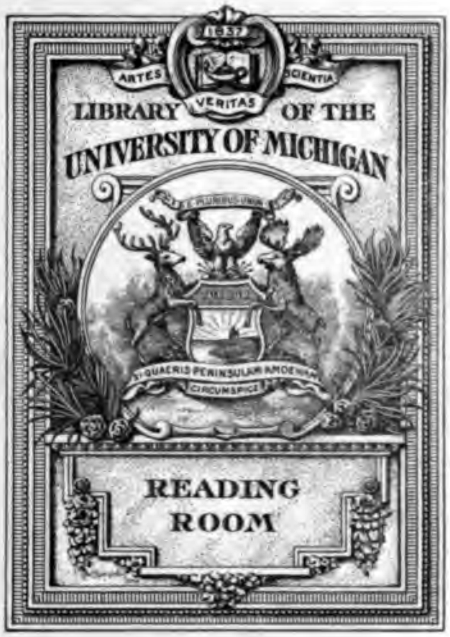

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PERTORY

OF INSURANCE AND ITS
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TREASURY

TED WITH THE ORIGIN AND
A HISTORY OF ALL KNOWN
ED IN GREAT BRITAIN,
INNING.

A DETAILED

PROGRESS OF INSURANCE

ND IN AMERICA.

AND A

OF VITAL STATISTICS.

BY

WALFORD, F.I.A., F.S.S.,

BARRISTER-AT-LAW;
AND HAND-BOOK," "INSURANCE YEAR-BOOK," ETC. ETC.

VOLUME III.

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TABLE OF ABBREVIATIONS USED IN THIS WORK;

MANY OF WHICH ARE SPECIALLY ADAPTED TO ITS PAGES :—

A.	Accident Insurance
Act.	Actuary
Act of Parl.	Act of Parliament
Add.	Addition, additional
Adv.	Advertisement
Amalg.	Amalgamation
Ann.	Annual, annum
Ann. rep.	Annual report
Annu.	Annuities, annuity, annuitant
Ap.	Apprenticeship Insurance
Art. of Asso.	Articles of Association
Art. of Sett.	Articles of Settlement
Assu.	Assure, assured, assurance, assurances
Assu. Mag.	*Assurance Magazine*
Asso.	Association

B.	Birth Insurance
B. of mort.	Bill of mortality
Bal.	Balance
Bon.	Bonus, bonuses
Brit.	Britain, British, Britannia
Bus.	Business

C.	Christening Insurance
C.	Cent.
C.p.c.	Cent. per cent.
Cap.	Capital
Chap.	Chapter
Co., Cos.	Company, companies
Comp. regis.	Complete registration
Con. Act.	Consulting Actuary
Consti.	Constitution
Contin.	Contingencies
Corp.	Corporation

D. of Sett.	Deed of Settlement
Div.	Dividend, dividends, division
Dol.	Dollar

Ed.	Edition, editor
Eds.	Editions
Edin.	Edinburgh
Ency. Brit.	*Encyclopædia Britannica*
Endow.	Endowment, endowments
E. and W.	England and Wales
Estab.	Established, establishment
Exp.	Experience
Expec.	Expectation

F.	Fire, Fire Insurance
F. So.	Friendly Society
Fid.	Fidelity guarantee
Fr.	France

G.	Guarantee Insurance
Gl.	Glass Insurance
Gov.	Government
Gt. Brit.	Great Britain
Guar.	Guarantee

H.	Hail Insurance
Hist.	History

Incorp.	Incorporation
Ins.	Insure, insured, insurance, insurances
Inst.	Institution, institutions
Int.	Interest
Intro.	Introduction

L.	Life, Life Insurance
L.J.	Lord Justice
Lim.	Limited
Liq.	Liquidator, liquidation, liquidated
Lond.	London

M.	Marine, Marine Insurance
Mag.	Magazine
Man.	Manager
Mar. Ins.	Marriage Insurance
Mort.	Mortality
Mort. obs.	Mortality observation
Mut.	Mutual

N. Y.	New York
Non-par.	Non-participating

Obs.	Observations
Off. Liq.	Official Liquidator
Off. Man.	Official Manager
Ordin.	Ordinance
Orig.	Original

P.a.	Per annum
P.c.	Per cent.
Pamph.	Pamphlet
Para.	Paragraph
Parl.	Parliament
Parl. Com.	Parliamentary Committee
Parti.	Participation
Phil. Trans.	*Philosophical Transactions*
Pol.	Policy, policies
Pop.	Population
Prelim.	Preliminary
Prem.	Premium, premiums
Prob.	Probability, probabilities
Prosp.	Prospectus
Prov. regis.	Provisional registration
Pub.	Published, publisher, publication

R.	Report
Red. prem.	Reduction of premium
Reg.-Gen.	Registrar-General
Regis.	Registration
Rep.	Report
Rev.	Reversion

S.	Service Insurance
Sec.	Secretary
So.	Society
Stat.	Statute
Stg.	Sterling
Subs.	Subscribed, subscribers, subscription

T.	Table
Trans.	Transfer, transferred, translation

U. K.	United Kingdom
U. S.	United States

V. C.	Vice Chancellor
V. Sta.	Vital Statistics
Vict.	Victoria

EXPLANATION TO THE READER.

The design of this work is that it shall be, as far as possible, self-interpreting. All technical terms used in its pages are explained in its pages, in their alphabetical order.

The arrangement of subjects is strictly *Alphabetical.*

The arrangement of articles is, as far as possible, *Chronological.* Dates are given whenever possible. Writers on Insurance subjects generally have a great disregard for chronological exactitude.

Words in Small Capitals placed in brackets, as [USURY], mean that the subject will be further treated of under that head.

When Small Capitals are used in the text without the brackets, it signifies that the subject is, or will be, treated of as a separate article.

Offices founded in London, or books published there, are not individually so designated in the following pages. The rule we have followed is to state all the exceptions. Therefore, where it is not specifically stated *otherwise,* London is to be assumed.

We are especially desirous of noticing all INSURANCE PAMPHLETS. Many of these are privately printed, or only accessible through their authors. Our thanks will be due for any contributions of this description.

A Table of the principal Abbreviations used in the work is given on the preceding page.

THE

ENCYCLOPÆDIA OF INSURANCE.

EQUITABLE So., Mort. Experience of.—The wonderful degree of interest which orig. attached to the mort. experience of this So. may be traced to two distinct causes. 1. The general interest which, as we have seen, was shown in all that related to the *Equitable* So. 2. More particularly to the great desire which was felt by all practically engaged in the bus. of Life Ins. to acquire the means of checking the Mort. T. orig. in use with the actual mort. experienced by insured life. In the first quarter of the present century, when numbers of ins. asso. had been formed in view of profit as commercial undertakings, this feeling was very intense, as will be seen by what follows. It will always be remembered that the mort. experience of the *Equitable* So. was the first pure life experience, as distinguished from annuitants and tontine lives, which became available for actuarial purposes. In view of the extended manner in which this experience has been made available for the purposes of other ins. asso., not only in the U.K., but in other parts of Europe, as also in the U.S., we propose to give a complete hist. of the incidents connected with the mort. experience of the So., arranged on a general chronological basis; but classified under the heads of the more prominent T. which have been deduced from this experience.

Mr. W. Morgan, in his *Doctrine of Annuities*, etc., pub. 1779, gave an outline of the results of general surveys of the mort. experience of the So. by each of three several processes which had been recommended by Dr. Price in 1777, and of which processes we have given a full account in our hist. of the So. under that date. Mr. Morgan says:

By the *first* method it has been found that during the term of 9 years (from Jan. 1768, to Jan. 1777) the proportion of deaths in the So. to those in the T. of Obs. for Lond., from which its prems. have been calculated, are—

From	the age of	20	to	30	as	7	to	17
,,	,,	30	,,	40	,,	3	,,	5
,,	,,	40	,,	50	,,	1	,,	2
,,	,,	50	,,	60	,,	2	,,	3
,,	,,	60	,,	70	,,	14	,,	11

Or in all ages from 20 to 70 as 2 to 3 nearly: that is, where the T. have supposed 3 claims would have happened, only 2 have taken place in the So. By comparing the decrements of life in this So. with those in Dr. Halley's T., which agree very nearly with De Moivre's hypothesis, they are found to be—

From	the age of	20	to	30	as	5	to	9
,,	,,	30	,,	40	,,	5	,,	6
,,	,,	40	,,	50	,,	6	,,	7
,,	,,	50	,,	60	,,	5	,,	6
,,	,,	60	,,	70	,,	5	,,	3
Or in all	ages from	20	,,	70	,,	11	,,	13 nearly.

By the *second* method, or by determining the proportion of the claims to the prems. for assu. on single lives, it appears that the claims in this So. have on an average for these last 9 years been £3115 p.a. less than they should have been: that is, the So. has enjoyed a clear ann. profit during this term of £3115 from part of its bus. only, which consists in ins. single lives.

By the *third*, which is most certain and decisive, the surplus stock of this So. is proved, by calculating even by the *London* T., to be considerably above £30,000.

Mr. Morgan, in his Address to a gen. court, 24 April, 1800, said:

The accounts have been so arranged as to enable me in every year to determine, with sufficient precision, in what degree the decrements of life among the members, compared with that in the T. of obs. from which the prems. are computed, have or have not been favourable to the So.; and the following statement contains the result of an experience of 30 years:

From the age of	10	to	20	they have been as	1	to	2
,,	20	,,	30	,,	1	,,	2
,,	30	,,	40	,,	3	,,	5
,,	40	,,	50	,,	3	,,	5
,,	50	,,	60	,,	5	,,	7
,,	60	,,	80	,,	4	,,	5

By this statement it appears that in every period the prob. of life are higher in the So., or, which is the same thing, the number of deaths is less than those in the T. which is made the foundation of its whole practice; and that at all ages taken together, these prob. are in the ratio of 3 to 2.

In the 7th ed. of Dr. Price's *Obs. on Rev. Payments*, ed. by Mr. W. Morgan, and pub. 1812, there occur the following statements regarding the mort. experience of the So., p. 182, note:

Until the time nearly in which this account was written the So. had computed all their prems. from the *London* T. of Obs., and it appeared from the experience of the 12 years (or from 1768 to 1780) that the decrements of life among their members had been:

	To those in *Lond.*	To those in *Breslau.*
From the age of 10 to 20 in the ratio of	1 to 1¼	1 to 1
,, ,, 20 ,, 30 ,,	3 ,, 7	2 ,, 3
,, ,, 30 ,, 40 ,,	4 ,, 9	2 ,, 3
,, ,, 40 ,, 50 ,,	3 ,, 5	8 ,, 9
,, ,, 50 ,, 60 ,,	2 ,, 3	6 ,, 7
,, ,, 60 ,, 70 ,,	9 ,, 10	9 ,, 8

And in a note at p. 191:

The *Equitable* So., since these obs. were written in 1783, has increased so immensely, both in the number and magnitude of its assu., as to become an inst. of the first importance. . . . The many thousands of which it is now composed render the decrements of life almost uniform among its members, and from the experience of more than 40 years those decrements are found to be even *one-third* lower than they are in the T. from which the prems. are computed. . . .

Mr. Morgan, in his Address delivered before the gen. court, 5 December, 1816, said, "The prob. of life in the So. bear the same ratio to those in the T. of obs. from which its prems. are computed as they have done for the last forty years."

In *The Principles and Doctrine of Assu., Annu. for Lives, and Contingent Rev.*, etc., pub. by Mr. W. Morgan in 1821 [being a second ed. of his work of 1779], he gives by way of "Postscript" the following nosological T., remarking that, "though it may not have an immediate connexion with the doctrine of Life Annu. and Rev., or perhaps lead to any certain conclusions respecting the proportion in which different disorders prevail among the human species, it cannot however be considered as altogether unimportant, or forming an improper add. to this work."

Table showing the Disorders of which Persons Assured by the Equitable *So. have died during the last* 20 *years from* 1800 *to* 1821.

DISEASES.	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80 etc.	Total.
Angina Pectoris	...	...	5	11	12	9	4	3	44
Apoplexy	1	3	19	38	69	69	38	5	242
Asthma	...	...	...	2	19	19	11	2	53
Atrophy	...	...	3	4	6	11	1	..	25
Cancer	...	...	1	4	10	8	1	1	25
Childbirth	...	...	2	2	...	...	...	...	4
Consumption	2	9	34	31	44	28	5	...	153
Convulsion Fits	...	...	3	4	1	3	...	...	11
Decay (natural and old age)	...	...	...	...	5	72	127	58	262
Diabetes	...	...	...	2	2	...	1	1	6
Dropsy	1	...	7	28	38	41	20	2	137
Dropsy in the Chest	..	1	3	18	34	28	16	...	100
Dysentery	...	...	1	1	2	4	4	...	12
Disease of the Stomach and Digestive Organs	...	...	5	4	8	8	1	...	26
Diseased Liver	...	2	5	24	23	21	4	...	79
Diseases of the Bladder and Urinary Passages	...	...	2	4	15	23	15	...	59
Epilepsy	...	...	2	3	2	1	2	...	10
Erysipelas	...	1	...	2	3	2	2	...	10
Fevers General	...	6	18	33	33	39	15	2	146
,, Bilious	...	1	4	8	9	4	1	1	28
,, Nervous	...	3	3	13	6	8	3	...	36
,, Inflammatory	...	...	...	4	6	3	2	...	15
,, Putrid	...	2	7	4	6	7	...	...	26
Gout	...	...	1	4	4	11	6	...	26
Inflammation of the									
Bowels	1	2	11	13	15	25	9	1	77
Lungs	...	...	9	4	24	22	12	2	73
Brain	...	3	7	5	5	3	...	...	23
Chest and Peripneumony	1	1	1	1	6	7	4	1	22
Palsy	...	1	3	8	26	42	34	2	116
Quincy	...	...	...	1	1	1	...	...	3
Rupture of a Blood Vessel	...	...	7	14	13	12	3	...	49
Slain in War	1	1	1	1	...	...	...	...	4
Stone	...	...	...	...	1	2	4	1	8
Suicide	...	1	2	3	7	2	...	...	15
Water on the Brain	...	...	...	1	3	1	...	...	5
	7	37	166	299	458	536	345	82	1930
							427		
Number Assured during last 20 years	1494	8996	33,850	45,429	36,489	19,042	6454 from 70, etc.		151,754

The T. was accompanied by the following obs.:

It should be observed that the diseases of which the members of the *Equitable* So. are stated to

> Proceeding in like manner with the numbers living and decrements in T. X. [*Northampton* T.], it will be found that in a community subject to the law of mort. expressed by the *Northampton* T., 543 persons between 10 and 20 would die ann. out of 54,444, or one out of . . . 100·265.
>
> Then comparing these results, it appears that the mort. in the former community would be to that of the latter as 100·265 is to 200·59, or as 1 to 2.
>
> By the same mode of reasoning it may be shown that the decrements of life represented by T. 1 in the succeeding intervals from 20 to 30, 30 to 40, etc., are to those exposed by T. X. in the respective proportions already stated.
>
> The identity of the rate of mort. expressed by T. 1, and that which obtained among the members of the *Equitable*, being thus shown, the mode of framing that T. is reserved for a more extensive work on the subject, which the author has been for some time conducting through the press [and which was not actually pub. until 1856, the year after Mr. Davies's death]. . . . [DAVIES, GRIFFITH.]
>
> In calculating and checking these T., the author has been materially assisted by Mr. Jonas Holbut, Act. of the *Rev.* Int So., and Mr. Thomas Parry, of the *Hope* Assu. Office; also by Samuel Ingall, of the *Imperial* Life Office, and David Jones, of the *Royal Exchange*, both young men of promising talents and indefatigable perseverance.

The following is Mr. Davies's T. of the *Equitable* So.'s Experience, obtained in the manner aforesaid:

Age.	Living.	Dying.	Expec.	Age.	Living.	Dying.	Expec.	Age.	Living.	Dying.	Expec.
10	2844	11	48·83	40	2236	28	27·40	69	1082	54	10·32
11	2833	11	48·02	41	2208	28	26·74	70	1028	54	9·84
12	2822	12	47·20	42	2180	28	26·07	71	974	55	9·36
13	2810	12	46·40	43	2152	29	25·40	72	919	55	8·88
14	2798	13	45·60	44	2123	30	24·75	73	864	56	8·42
15	2785	14	44·81	45	2003	30	24·10	74	808	56	7·97
16	2771	15	44·04	46	2063	30	23·44	75	752	55	7·52
17	2756	16	43·27	47	2033	31	22·78	76	697	55	7·08
18	2740	17	42·52	48	2002	32	22·12	77	642	54	6·64
19	2723	18	41·78	49	1970	33	21·47	78	588	54	6·20
20	2705	18	41·06	50	1937	35	20·83	79	534	54	5·78
21	2687	18	40·33	51	1002	37	20·20	80	480	54	5·38
22	2669	19	39·60	52	1865	39	19·59	81	426	53	5·00
23	2650	19	38·88	53	1826	41	19·00	82	373	52	4·63
24	2631	20	38·16	54	1785	41	18·43	83	321	50	4·30
25	2611	20	37·44	55	1744	42	17·85	84	271	47	4·00
26	2591	21	36·73	56	1702	43	17·28	85	224	43	3·73
27	2570	22	36·02	57	1659	44	16·71	86	181	38	3·50
28	2548	23	35·33	58	1615	45	16·15	87	143	32	3·31
29	2525	24	34·65	59	1570	46	15·60	88	111	26	3·11
30	2501	24	33·98	60	1524	46	15·06	89	85	20	2·91
31	2477	25	33·30	61	1478	46	14·51	90	65	16	2·65
32	2452	26	32·64	62	1432	47	13·96	91	49	13	2·36
33	2426	26	31·98	63	1385	48	13·42	92	36	11	2·03
34	2400	26	31·32	64	1337	49	12·88	93	25	9	1·70
35	2374	27	30·66	65	1288	50	12·35	94	16	7	1·31
36	2347	27	30·01	66	1238	51	11·83	95	9	5	1·05
37	2320	28	20·35	67	1187	52	11·32	96	4	3	0·75
38	2292	28	28·70	68	1135	53	10·82	97	1	1	0·50
39	2264	28	28·05								

In the construction of this T. Mr. Davies had both used and improved Barrett's Columnar Method.

The circumstances which induced Mr. Davies to pub. the "little tract" now under review, in advance of his larger work, we have already stated in our biography of Mr. Davies. Turning to the larger work (p. 94) we find an indication of the confidence the author had in the T. he had produced:

> But taking all these circumstances into consideration, it must be allowed, that however doubtful the limited experience of a new inst. might be regarded, the proportions stated by Mr. Morgan, repeated and confirmed as they have been for a period exceeding half a century, afford more satisfactory data for determining the *rate of mort. among assured lives* than any registers hitherto made public.

In view of what is to follow, it seems desirable to quote one or two further passages from this "more extensive work":

> By the nosological T. annexed to the last ed. of Mr. Morgan's work on assu., it will be found that, *including renewals*, the assu. effected at the *Equitable* during the first 20 years of the present century were as under, viz.:

1494	on lives between	10 and 20	36,489	on lives between	50 and 60
8996	,, ,,	20 ,, 30	19,042	,, ,,	60 ,, 70
38,850	,, ,,	30 ,, 40	5880	,, ,,	70 ,, 80
45,429	,, ,,	40 ,, 50	574	,, ,,	80 and upwards.

> Hence, supposing these ins. to have been effected on as many different lives, and the whole made simultaneously at the beginning of one and the same year, it is manifest that among the first class . . . 15 deaths might have been expected to happen in the year according to the *Northampton* T.; or . . . 7 deaths according to the T. we have formed from the Experience of the *Equitable*. . . .
>
> Nor is it difficult to reconcile the apparent incongruity between the number of deaths exhibited in the last col. of this abstract [we do not give the abstract here referred to] and the number of deaths (1930) which actually took place at the *Equitable* from 1800 to 1820; for the 151,754 in the first col. represents the number of *insurances*, and not the number of lives on which those ins. were effected; and it is well known to those connected with life offices, that it is no uncommon thing for *several ins. to be effected on the same life*; the number of lives out of which the 1930 deaths happened must therefore have been materially less than 151,754, otherwise Mr. Morgan's statements in 1812, 1816, and 1825, must have been altogether erroneous. Nor must it be forgotten, that in order to deduce the rate of mort. from the experience of an office (an object evidently not contemplated by Mr. Morgan in the *Nosological* T. above referred to), allowance must be made for pol. effected for periods less than a year, as well as for those that are cancelled by expiration, forfeiture, or redemption, before the time for renewal prems. would have become due.

He then proceeds to compare the results of his own T. with those of the *Carlisle* T. as follows: out of

Persons Living	Between the age of	There died annually	Making *one* out of every	At the *Equitable* one died out of
63,083	10 and 20	370	170	200
58,980	20 ,, 30	448	132	128
53,894	30 ,, 40	567	95	90
47,642	40 ,, 50	678	70	70
40,953	50 ,, 60	754	54	43
30,826	60 ,, 70	1242	25	26
17,502	70 ,, 80	1448	12	14
5,725	80 and upwards	953	6	6
318,605	10 upwards	6460	49½	49⅓

"From which it appears that the rate of mort. indicated by the 2nd T. at all ages from 10 upwards agree to a fraction, *although at particular ages they materially differ.*"

We suspect it was this general agreement with the *Carlisle* T. that obtained for Mr. Davies's T. the popularity which it so long enjoyed. It purported indeed to be based upon the experience of the *Equitable* So.; but those who are really familiar with its construction can but regard it as a hypothetical T. It has long been known that the real data comprised 6344 lives, and 1220 deaths. The mean number of lives under obs. being 2522.

We propose now to pass in review some criticisms upon this T.

We do not find that attention has hitherto been drawn to the answer of Mr. W. Morgan before the Select Parl. Committee on Friendly Sos. in 1827. Being asked by the Chairman: Have you any reason to think that the tables calculated by Mr. Griffith Davies from the Experience of the *Equitable* Office are incorrectly deduced from the data that they furnish? He replied: I do not think the data were sufficient to compute any T. from; *I am sure they were not.* State your reasons more particularly?—I will give my reasons. We insure no lives hardly under 30, so that the number is too small to be depended upon with regard to the prob. of life under that age. Those T. begin in early life, and a great deal must be assumed in giving a T. where there are no data to go from; besides, I find the prob. of life approaching nearer to the *Northampton* T. in our office than it used to be in the later periods of life; for the *Northampton* T. gives the decrements of life as high as most tables in old age.

In a paper read by Mr. J. W. Lubbock [now Sir J. W. Lubbock, Bart.] before the Cambridge Philosophical So., 30 March, 1829 [and pub. in the *Trans.* of that So.], *On the Comparison of Various T. of Annuities*, we find the following passages:

> In a recent pub. Mr. Morgan admits that he was not then aware of the great number of instances in which there are several policies on one and the same life, and he says that this circumstance very materially affects Mr. Davies's calculations.
>
> Such statements as these [those already quoted from Mr. Morgan's addresses, etc.] appear to me too vague to be made the basis of calculations, although the experience of the *Equitable* So. would be most valuable, *if we were acquainted with all the details concerning it.*

Mr. John A. Higham, in his paper, *On the Value of Selection*, etc., read before the Inst. of Act., 1851 [and pub. in vol. i. of *Assu. Mag.* p. 179], says at the close of that most able production:

> The preference I have elsewhere expressed for Mr. Davies's T. as a basis for the calculation of prems. is confirmed by the present extended obs. It agrees very nearly throughout with the *values of lives at the time of selection* which those obs. furnish. But if it agreed exactly, it would be a false T. for every other purpose than that of determining the prem. All subsequent calculations affecting the pol. ought to be made from classified T., such as those appended to this paper; not those particular T. . . . At the moment of entry, Mr. Davies' T. represents (I think) most correctly the value of life for an office whose bus. is of the best class; after a considerable period of assu. the *Northampton* values will be most correct. . . .

Mr. A. G. Finlaison, in his *Rep. and Obs. on Tontines and Life Annu.*, 1860, says:

> The first T. mentioned, framed by the late Mr. Griffith Davies, an Act. of profound science, is derived from what may be called a factitious experience of the *Equitable* So., disclosed by the late Mr. W. Morgan in his ed. of Dr. Price's works. . . . This factitious experience consisted merely of a statement of the ratio which the decrements of life in the *Equitable* experience bore at certain ages to those decrements which are given in the *Breslau* T. of Mort. Mr. Griffith [Davies] raised an immense superstructure of calculation, in the T. of the values of single and joint life annu. at many different rates of int. on this small foundation; but these computations, which, notwithstanding their origin, make a near approach to the truth, and form, for some purposes, a highly useful system of T., are also based *on a combination of the two sexes.*

Mr. Sprague pointed out in the *Ins. Record*, 31 March, 1871, that this T., combined with the net prem. method of valuation, gives smaller pol. values than any other T. known; and hence that offices desiring to swell their reserves (by lessening their liabilities) will naturally use it.

Numerous life offices do base their operations upon this T.: its perfect graduation being the alleged cause of its extended adoption.

Gompertz's T. (1825).—In a paper contributed by the late Mr. Benjamin Gompertz to the Royal So. in 1825, *On the Nature of the Function expressive of the Law of Human Mort.*, etc , and pub. in the *Phil. Trans.* of that year, occurs the following passage :

> In the ingenious Mr. Morgan's 6th ed. of Price's *Annuities*, p. 183, vol. i., it is stated that in the *Equitable* Assu. So. the deaths have differed from the *Northampton* T.; and that from 10 to 20, 20 to 30, 30 to 40, 40 to 50, 50 to 60, and 60 to 80, it appears that the deaths in the *Northampton* T. were in proportion to the deaths which would have been given by the experience of that So. respectively, in the ratios of 2 to 1; 2 to 1; 5 to 3; 7 to 5; and 5 to 4. According to this the decrements in 10 years of those now living at the ages 10, 20, 30, and 40, will be the number living at those ages multiplied respectively by ·0478; ·0730; ·1024; ·1284; and the deaths in 20 years of those now living at the age of 60 would be the number of those living mulitiplied by ·3163. . .

He then proceeds to construct a T. upon this basis; but his mode of treatment is far too scientific and technical to come within the scope of our present purpose. The T. agrees very nearly with that given by Mr. Babbage in the following year; but being deduced from an algebraical formula, it presents a more uniform graduation.

Mr. Gompertz said before the Select Parl. Committee on Friendly Sos. in 1827 :—It appears to me from what I have deduced that the *Carlisle* T. came very near to the *Equitable* Experience. The So. uses the *Northampton* T., but the real experience of the *Equitable* So. appears to agree with the *Carlisle* T. tolerably well to a great extent; and the same observations have been made by other gentlemen, I believe Mr. Babbage, and Mr. Davies, and Mr. Milne, as well as myself. I should conceive this a sufficient reason why the *Northampton* T. do not apply.

Babbage's T. (1826).—In 1826 Mr. Charles Babbage pub.: *A Comparative View of the Various Inst. for the Assu. of Lives.* Therein the writer took (*inter alia*) a general, but somewhat cursory view of the various then existing Mort. T., after which he proceeds:

> Having now pointed out the defects of the T. in general use, it will naturally be inquired what others it is proposed to substitute. To this it may be answered, that the best substitution would be a T. actually constructed from the deaths occurring amongst a large body of persons of this very class, whose law of mort. we wish to ascertain. Materials for such a T. exist, and probably in the best and most authentic form. The *Equitable* So. has been estab. 60 years, and it must possess records of the death and cause of death of all those who have had claims on its funds. Another So. of considerable extent, the *Amicable*, has existed above a century. A vast quantity of valuable materials is, without doubt, contained in the records of these two sos.; and if they were each to communicate to the public the facts of which they are in possession, it would form a most important add. to our knowledge, and supply the most accurate materials for T. of this class which have yet been produced. It is a fortunate circumstance that the two inst. in which are deposited this great accumulation of facts are unfettered by the partial and contending interest of any proprietary, ... and there can be no private interests to oppose their pub. for the advancement of science the results of that experience, which it alone, by securing their stability, has enabled them to acquire. . . .
>
> In the absence of that which would, undoubtedly, be the best data for the construction of such T., I have had recourse to a very valuable substitute, for which the public are indebted to Mr. Morgan. *It consists of the comparative decrements of life between the experience of the Equitable So. and the Northampton* T. The comparison is instituted for every 10 years; and although it would have been more valuable had it referred to shorter periods, yet I believe when they are pub. it will not be found to differ widely from the more numerous and detailed results; and I have no doubt that it will more nearly represent the actual state of mort. amongst such a body of persons than any other T. . . .
>
> The experience of the *Equitable* So. during the 30 years which terminated in 1800 has furnished the data; and the confidence which I repose in their accuracy is confirmed by the statement of Mr. Morgan that "the prob. of life appear to have been equally favourable in every period" [Address, 1801].

Mr. Babbage took the statement made by Mr. Morgan at the gen. court, 24 April, 1800, and already quoted, as his basis. He says :

> From this statement the *Northampton* tables have been corrected, so as to represent the mort. given by the experience of the *Equitable* So. for every 10 years of human existence; and from a joint view of the T. of mort. of Deparcieux, and those formed at Carlisle, the numbers so found have been distributed over the intermediate years. In this distribution it will be found that the numbers first deduced are slightly changed, in order to produce greater general uniformity; in all cases, however, except one, the number of deaths is slightly increased. Different computers would necessarily make some variations in the formation of such a table. If I were to re-compute it, I should be inclined to make some changes towards the latter end; these I have only refrained from doing, because the production of better materials, already existing, would render the labour of comparatively small value. Mr. Gompertz has, in the *Phil. Trans.* for 1825, deduced a similar T.; it agrees very nearly with that in the present vol.; but from the circumstance of its being deduced from an algebraical formula, it is, perhaps, a little more uniform in its decrements. It is, however, to be presumed that the differences thus arising would lead to incomparably smaller errors than those which would result from the use of any other tables.

He adds :

> It is now 25 years since the statement referred to was first made, and in that time add. and much more extensive information on this subject must have been collected, not only at the *Equitable*, but at many other offices. The value of this experience to each office can be but trifling; but if each would communicate to the public the results of its own, a mass of information would be produced which would greatly contribute to the improvement of our knowledge on this subject, and ultimately conduce to the benefit of all. [EXPERIENCE LIFE TABLES.]

Mr. Babbage arranged the data supplied at the end of Mr. Morgan's Treatise of 1821, and already given, into the form annexed, calling it "Table of the Pop. of a So."

No. of Persons assuring at the *Equitable* So. under		No. of Persons assuring at the *Equitable* So. between the ages	
20 ...	1,494	10—20 ...	1,494
30 ...	10,490	20—30 ...	8,996
40 ...	44,340	30—40 ...	33,850
50 ...	89,769	40—50 ...	45,429
60 ...	126,258	50—60 ...	36,489
70 ...	145,300	60—70 ...	19,042
above 70 ...	151,754	70 above ...	6,454

He says:

> The number of persons assu. between given ages is copied from that work, and the other column is formed by the successive add. of those numbers. Half the total number, or 75,877, will be found between the ages 40 and 50, and on making an interpolation, it will appear to be a little beyond the age of 47.

Finally, we reach the T. itself, which we give in the form presented by Mr. Babbage. For "numbers" at the head of col. 2 may be read *Living;* for "difference," col. 3, *Dying.* Mr. Babbage says (p. 162) that several of the T. at the end of his vol. were computed on Barrett's method. Whether this particular T. was, he does not state.

T. of Mort. deduced from the Experience of the Equitable So. (BABBAGE).

Age.	Numbers.	Difference.	Age.	Nos.	Difference.	Age.	Nos.	Difference.	Age.	Nos.	Difference.
10	6460		33	5540	55	56	3937	93	78	1600	115
11	6435	25	34	5483	57	57	3841	96	79	1481	119
12	6409	26	35	5424	59	58	3743	98	80	1357	124
13	6381	28	36	5364	60	59	3643	100	81	1219	138
14	6351	30	37	5303	61	60	3542	101	82	1069	150
15	6320	31	38	5241	62	61	3440	102	83	923	146
16	6288	32	39	5179	62	62	3337	103	84	783	140
17	6255	33	40	5117	62	63	3234	103	85	651	132
18	6221	34	41	5055	62	64	3130	104	86	527	124
19	6186	35	42	4993	62	65	3024	106	87	413	114
20	6150	36	43	4931	62	66	2918	106	88	315	98
21	6113	37	44	4869	62	67	2811	107	89	235	80
22	6075	38	45	4806	63	68	2704	107	90	170	65
23	6035	40	46	4742	64	69	2596	108	91	120	50
24	5993	42	47	4675	67	70	2487	109	92	84	36
25	5949	44	48	4605	70	71	2378	109	93	56	28
26	5903	46	49	4532	73	72	2269	109	94	35	21
27	5855	48	50	4455	77	73	2159	110	95	20	15
28	5805	50	51	4375	80	74	2049	110	96	10	10
29	5754	51	52	4293	82	75	1938	111	97	4	6
30	5702	52	53	4208	85	76	1827	111	98	1	3
31	5649	53	54	4120	88	77	1715	112	99	0	1
32	5595	54	55	4030	90						

From the preceding T. Mr. Babbage computed the money values of L. annu. at different ages. We have given an abstract of that T. under our hist. of L. ANNU. date 1826. He also deduced a T. of single and ann. prems. for L. Ins., of which the following is an abstract.

Table of Prem. p. £100—*Equitable* Experience, 3 p.c.

Age	15	Singe Premium	£30	13	5	Annual Premium	£1	5	9
	20	,,	33	12	2	,,	1	9	6
	25	,,	36	14	0	,,	1	13	9
	30	,,	39	15	11	,,	1	18	6
	35	,,	43	1	3	,,	2	4	1
	40	,,	46	11	0	,,	2	10	9
	45	,,	50	11	9	,,	2	19	8
	50	,,	54	18	5	,,	3	11	0
	55	,,	59	4	1	,,	4	4	7
	60	,,	63	9	7	,,	5	1	3
	65	,,	68	0	4	,,	6	3	11
	70	,,	72	19	2	,,	...	...	

To these prems. no add. had been made for expenses.

We owe the construction of this T. to the circumstance that Mr. Babbage had been selected as the Act. of the *Protector* Life (No. 1); and for the purposes of that Co. he had felt it his duty to construct a new T. He says [*Passages from the Life of a Philosopher*, 1864]:

> On examining the materials which existed for a T. of the value of lives, I found in one of the Addresses of Mr. Morgan, the Act. of the *Equitable*, materials with which to construct, by the aid of various calculations, a very tolerable T. of the actual mort. in that So. Upon this basis I calculated the T. of our new inst.

An add. interest attaches to Mr. Babbage's T. from the fact of its having been adopted by the best-known of the German Life Offices—the *Gotha Life Assu. Bank*, founded 1827—when there existed scarcely any knowledge of L. Ins. in Germany. A modification was made in the ages above 55, as the mort. shown by the T. appeared to be too small—the more so that the mort. on the Continent was deemed to be higher than that of Eng. [*Assu. Mag.* ix. p. 48.] The mort. experience of this inst. has agreed very nearly with the T. as constructed by Mr. Babbage, up to about the 57th year, after which the deaths have been rather more frequent than they were in the *Equitable* So. [*Passages*, etc., 1864].

Some comparative obs. have been made on the preceding T.

Mr. Milne, in reviewing the circumstances under which Mr. Griffith Davies and Mr. Babbage had constructed their Tables, says:

> Mr. Morgan, in the statement on which those T. of Mr. Babbage and Mr. Davies were founded, contented himself with the use of two simple digits only, to express the proportion of the mort. of the *Equitable* So. to that in the *Northampton* T. in each decade of age; and although that gentleman for 25 years after 1800, when that statement of the 30 years previous obs. was made, continued in notes

> on Dr. Price's *Obs. on Rev. Payments*, and in his Addresses to the gen. courts of the *Equitable* So., to state that the proportions still remained the same, the obs. extended over a period of 55 years, he never gave any statement more full or distinct. These were scanty materials certainly to construct a T. of mort. from; and yet the agreement between the tables formed from them and the best of other existing T. of mort., is very remarkable.—*Ency. Brit.* art. "Annuities."

Mr. Griffith Davies said before the Select Parl. Committee on Friendly Sos. 1827:—Mr. Gompertz, Mr. Babbage, and myself deduced separately, without the knowledge of each other, T. of mort. from the report of Mr. Morgan as to what had taken place in the *Equitable*. Mr. Gompertz compared the mort. during an interval of 10 years with the number living at the commencement of that interval. I deduced mine by comparing the mort. in any year with the number living at the beginning of that year, and not taking the whole 10 years together; that would make a trifling difference in the number living from year to year. Similar differences in the modes of calculation cause Mr. Babbage's T. and mine to differ in a trifling degree; I believe not to any very great extent.

Dr. Thomas Young's Obs. (1826).—In 1826 Dr. Thomas Young, a mathematician of considerable repute, contributed to the Royal So. a paper entitled, *A Formula for expressing the Decrement of Human Life*. This paper is printed in the *Phil. Trans.* for the same year (p. 287), and contains the following passage:

> The number of deaths occurring in 20 years, as recorded by Mr. Morgan, might have been made the foundation of a very valuable determination of the mort. occurring in a certain class of persons, if the number of the *Equitable* So. had become stationary before the commencement of the record; but in order to deduce from it a just estimate of the value of life, it would then be necessary to alter the number of deaths at each age in the inverse proportion of the numbers of the living compared—that is to say, not simply of the sums of the persons admitted under that age, but of the number of persons born whom they represent; since, in comparing the joint mort. of any two lists of persons, we must obviously add together the deaths belonging, not to a given number of persons of various ages, but of a number proportionate to the survivors at the respective ages out of a given number of births; so that in this manner the apparent mort. in the earlier portions of the regis. would require to be augmented, not only on account of the smaller number of persons who have actually contributed to furnish it, but also on account of the greater proportion that these persons bear to the corresponding number at birth, when compared with the survivors at more advanced ages, who represent a pop. still more exceeding their own numbers. On the other hand, since the regis. in question relates only to a limited number of years, immediately following a very rapid increase of the So., it is evident that the deaths must have occurred at earlier ages than if it had been continued until all the lives had dropped.
>
> Of these three modifications, it may be sufficiently accurate for the present purpose to omit the two latter, as nearly counterbalancing each other, and to augment the earlier numbers in the proportion only of the members of the So. to whom they must necessarily have belonged, supposing that the admission had taken place about the same ages at all periods; assuming also the number of survivors at 45 to be in the same proportion to the births as in the *Carlisle* T. We may then proceed to take a mean between the mort. thus obtained, with proper interpolations, and the obs. at Carlisle, as the second of the three principal bases to be afterwards incorp. with the mort. of *Northampton* and *Lond. Further than this it is impossible to place any great reliance on Mr. Morgan's document, which makes the ann. deaths in "a pop. exceeding* 150,000" *not quite* 1 *in* 1500.

It was afterwards discovered that this writer, as had Mr. Babbage also, had fallen into the belief that 150,000 persons had been ins. in the *Equitable* So.

Mr. John Naylor, the then Act. of the *Economic* Life, submitted to the Select Parl. Committee which sat in 1827, a paper which will be found in Appendix D. of the Rep. (p. 83), wherein he says:

> The T. calculated by Mr. Babbage and Mr. Davies, from what those gentlemen call the Experience of the *Equitable* So., rest solely for their authority on a comparison (in round numbers) made by Mr. Morgan, of the decrements of life among the members of that So., with the decrements of life according to the *Northampton* T. This comparison—the result of more than 40 years' experience—and made by a gentleman of such well-known accuracy and ability, affords an excellent criterion for judging of the correctness of any proposed T. of mort.; *but does not, in my opinion, furnish the necessary data for computing a T. of mort. with sufficient precision.* A convincing proof of this is given in the above T. [of comparisons], in which it will be found that in any given age (from 10 to 50 inclusive) the values of an annu., as calculated by Mr. Babbage and Mr. Davies from the same data, differ more from each other than the *Carlisle* value does from either.

Mr. W. Morgan's T. (1828).—In 1828 Mr. W. Morgan pub. *A View of the Rise and Progress of the Equitable So.*, etc., wherein is contained further details regarding the mort. experience of the So., and also a Mort. T., which we shall presently give; but we must first give a T. of the mort. experience of the So. "during the last 12 years"—meaning, we assume, from 1815 to 1827. We add. a col. of the proportions; and we amend the headings to correspond with what the author afterwards declared to be his meaning.

Table of the decrements of Life in the Equitable So. during 12 *years ending* 1827 (?):

Age.	No. of persons living at the beginning of each year during the last 12 years.	Died.	The numbers that should have died according to the *Northampton* T.	Proportions.
20 to 30	4,720	29	68	3 to 7
30 ,, 40	15,951	106	243	3 ,, 7
40 ,, 50	27,072	201	506	2 ,, 5
50 ,, 60	23,307	339	545	5 ,, 8
60 ,, 70	14,705	426	502	4 ,, 5
70 ,, 80	5,056	289	290	Equal
80 ,, 95	701	99	94	

In reading this Table it must be remembered that the totals in cols. 2, 3, and 4 apply to the whole 12 years; and that the mean results for any one year will be but *one-twelfth* of the figures there stated. The author says, by way of note to this T.:

> In my former statement [he does not say which, but we may assume it applies to all] I was not aware of the great number of instances in which there are several pol. on one and the same life. This very materially affects the computations, *and the error is now rectified; so that the present is, in fact, the only correct T. of the decrements of life in the So.* But I do not see that it can be applied to any practical use, at least as to lives under the age of 50.
>
> By the annexed T. the decrements of life at all ages are as 2 to 3. *If it had been formed from the number of assu., those decrements would have been as 5 to 9.*

He also says regarding this T.: "Here we see the prob. of life in the So. (which so far exceed those in the *Northampton* T. in the earlier ages) continually approaching to them at a more advanced age, till at last, arriving at an age at which no new members are admitted, they become nearly equal, and afford a striking proof of the accuracy of that T."

In the preceding year Mr. Morgan had said before the Select Parl. Committee on Friendly Sos. regarding these duplicate pol.:

> There is one thing which has taken place within these few years, which renders the prob. rather less than I thought they were in the So.; that is, a great number of assu. are made upon one and the same life, so that sometimes by one death 7 or 8 pol. become vacant. This has not been attended to, and therefore makes a considerable difference in the calculation. I may safely say that *one-eighth* of the ins. are thus circumstanced, which reduces the real number of lives nearly in the same proportion.

Returning to the *View*, etc., he says:

> It has been seriously proposed to adopt a T. founded on what is called the *experience of the So.*, which, were it possible to be effected, would, by making the prems. at all ages just sufficient to pay the sum orig. assured, destroy the last resource of the So., and every hope of any future add. to the claims.
>
> The great majority of assu. in this So. is from the age of 40 upwards. On young lives, especially on those under the age of 30, they are comparatively few, and hardly of sufficient number to form any safe conclusion as to the prob. of life among them. Under the age of 8 no assu. are made, and very few under the age of 20. A T. therefore deduced from the experience of the *Equitable* So. for all ages, from birth to the extremity of life, must be entirely hypothetical under the age 20; not much to be depended upon from that age to 30; and to a certain degree rendered incorrect by the continued add. of new ins. on lives from the age of 30 to 50. For reasons already explained . . . the prob. of life in the So. after the age of 50 approximate to those in the *Northampton* T.; and from the age of 60 upwards they agree so nearly as to prove the accuracy of both, and to make it a matter of no consequence from which of them, at that advanced period of life, the ann. prems. are computed. . .

We finally reach the "Appendix," where yet another attempt is made to cut away the foundation from all previous T. based upon the *Equitable* Experience; while, however, a new T. of a like character is still presented, qualified, however, as we shall see:

> In the account which was pub. in my Address to the gen. court in the year 1800 of the prob. of life in the So., I had no other end in view, than to show that they were so much higher than those in the T. from which the prems. were computed, as to secure the So. against all danger from continuing those prems. in its future assu. *But I never considered those prob. as affording sufficient data for the construction of a T. of the values of L. annu. at all ages, or thought that it would be prudent to found any important measures upon documents so scanty and imperfect.* Having been regarded, however, as one of the many proofs of the increased longevity of mankind, which had of late become a very popular opinion, not only T. of life annu., etc., have been computed from these defective materials, but the So. has been urged to adopt them as the basis of all its future operations.

He then passes on to his own T.:

> The following T., though computed from a corrected account of the prob. of life in the So., *are still deduced from documents, particularly in the earlier parts of life, much too defective to be depended upon, and have been constructed merely for the purpose of effecting some calculations directed to be made by the last gen. court of the So.*

Here follows the T.—or rather a combination of the results of the 4 tables presented by Mr. Morgan:

Table showing the Prob. of the Duration of Human Life, the Value of Annu., and the Single and Ann. Prem. for Life Ins., according to the Experience of the Equitable So.—W. MORGAN, 1828.

Age.	Living.	Dying.	Expectation.	Value of Annu.	Single Premium.	Annual Premium.	Age.
20	3000	21	41·11	21·572	34·246	1·517	20
21	2979	22	40·40				21
22	2957	23	39·70				22
23	2934	23	39·00				23
24	2911	23	38·31				24
25	2888	23	37·61	20·566	37·175	1·724	25
26	2865	23	36·82				26
27	2842	23	36·20				27
28	2819	23	35·49				28
29	2796	24	34·78				29
30	2772	24	34·08	19·493	40·299	1·967	30
31	2748	24	33·37				31
32	2724	24	32·66				32
33	2700	25	31·95				33
34	2675	25	31·24				34
35	2650	25	30·53	18·292	43·796	2·270	35

Age.	Living.	Dying.	Expectation.	Value of Annu.	Single Premium.	Annual Premium.	Age.
36	2625	25	29·82				36
37	2600	26	29·10				37
38	2574	26	28·39				38
39	2548	26	27·67				39
40	2522	26	26·95	16·854	47·984	2·687	40
41	2496	27	26·23				41
42	2469	27	25·51				42
43	2442	28	24·79				43
44	2414	29	24·07				44
45	2385	31	23·36	15·244	52·671	3·243	45
46	2354	32	22·66				46
47	2322	32	21·96				47
48	2290	33	21·26				48
49	2257	33	20·57				49
50	2224	36	19·80	13·481	57·799	3·992	50
51	2188	39	19·18				51
52	2149	40	18·52				52
53	2109	42	17·86				53
54	2067	44	17·22				54
55	2023	47	16·58	11·652	63·131	4·990	55
56	1976	49	15·96				56
57	1927	52	15·36				57
58	1875	54	14·77				58
59	1821	57	14·19				59
60	1764	59	13·63	9·846	68·389	6·306	60
61	1705	60	13·09				61
62	1645	61	12·55				62
63	1584	63	12·01				63
64	1521	65	11·49				64
65	1456	66	10·99	8·337	72·783	7·795	65
66	1390	68	10·48				66
67	1322	69	9·99				67
68	1253	71	9·69				68
69	1182	72	9·06				69
70	1110	72	8·61	6·7342	77·474	10·017	70
71	1038	72	8·17				71
72	966	72	7·75				72
73	894	72	7·33				73
74	822	72	6·93				74
75	750	72	6·55	5·1997	...	...	75
76	678	69	6·20				76
77	609	66	5·83				77
78	543	61	5·49				78
79	482	59	5·12				79
80	423	57	4·76	3·7815	...	...	80
81	366	54	4·42				81
82	312	51	4·10				82
83	261	50	3·81				83
84	211	43	3·60				84
85	168	37	3·39	2·6201	...	...	85
86	131	31	3·21				86
87	100	25	3·05				87
88	75	19	2·90				88
89	56	14	2·71				89
90	42	11	2·45	1·7948	...	...	90
91	31	9	2·14				91
92	22	7	1·81				92
93	15	6	1·43				93
94	9	5	1·05				94
95	4	3	0·750	·2427	...	...	95
96	1	1	0·500				96

In the original the annu. values are given for each year from 20 to 95; and the ins. values for each year from 20 to 70. For our present purposes the quinquennial abstract will suffice.

The statement of the directors of the So., presented to the gen. court 22nd Jan. 1829, contained the following passages:

> They have, nevertheless, thought it their duty to ascertain whether any T. accurately deduced from the experience of this So. do now exist; and whether it be possible to construct such T. *They are satisfied that the T. already pub. professing to be founded upon "the Equitable experience" cannot be relied upon:* in proof of this it might perhaps be sufficient to mention, that although each has been constructed by an eminent mathematician, they do not agree; *but in truth those gentlemen had not before them perfect or complete materials.* No allowance has been made for the plurality of pol. effected on one life; and other deficiencies exist which, without implying any want of skill in the framers, necessarily produce inaccuracy in the T.
>
> To furnish the means of constructing a T. would necessarily require much time and labour, and perhaps occasion some extraordinary expense. And it must be observed that owing to the smallness of the number of persons ins. at the earlier ages, the T. could not accurately describe the expec. of life throughout its whole duration.

In a letter addressed (in 1829) to the Right Hon. T. P. Courtenay, M.P., who had been Chairman of the Committee on Friendly Sos. in 1825, by Mr. Charles Babbage, the writer drew his attention to the pub. by Mr. Finlaison of the mort. experience of the Gov. annuitants, and then urged upon him the importance of also having compiled and made public the mort. experience of the "great estabs. for granting assurances." He said he was aware the time and expense of such an inquiry at the *Equitable* might be considerable, but he thought if Gov. were applied to, it would lend its assistance. He then adds:

> I confess, however, as a member of that So., I should regret exceedingly that the fear of expense should induce us to owe this advantage to anything but our own exertions. We have succeeded and grown wealthy by availing ourselves of the experience which we owe to the industry of those who preceded us; they have now passed away, and although to them all expression of our gratitude is vain, we owe it to our own character not merely to transmit unimpaired to our successors the light which conducted us to prosperity, but to collect and cherish every additional ray our experience has furnished, which may add. to its permanence or utility.

A note by Mr. Morgan, in the ed. of Deed, Addresses, etc., 1833, p. 291, is as follows:

> In the last year (1830) the prob. of life in the So. have been much the same upon the whole as in former years. Compared with those of the *Northampton* T. and with the *Equitable* experience, they had been as annexed:
>
> Though the whole number of deaths has been almost the same in the last as in the three or four preceding years, it appeared from comparing the proportion of deaths in the separate decades under the age of 60, that they often differ from each other in different years, arising from causes which I have explained. . . . In the decades above the age of 60, it appears that little or no variation takes place, and that the decrements of life are generally the same with those in the *Northampton* T.; but if we were to reason from the mort. between 80 and 90, we should conclude that the decrements in the So. were to those in the *Northampton* T. in the proportion of 5 to 4; but no conclusion can be deduced from the experience of a single year.

Age.	Number.	Died.	Should have died by the	
			Northampton T.	*Equitable* Experience.
20 to 30	343	2	5	3
30 „ 40	985	11	18	9
40 „ 50	1627	19	38	20
50 „ 60	1880	34	62	42
60 „ 70	1241	55	59	55
70 „ 80	574	47	50	50
80 „ 90	80	18	15	15
		186	247	194

There are numerous comments and criticisms upon Mr. W. Morgan's T. scattered through the works of that and the succeeding period, especially in Baily's and Milne's Treatises; but we do not think it necessary to dwell upon these now.

Mr. Arthur Morgan's T. (1834).—In 1834 there was pub. by Mr. Arthur Morgan, the then Act. of the So., *T. showing the total number of persons assured in the Equitable So. from its commencement in September,* 1762, *to January* 1, 1829, *distinguishing their ages at the time of admission into the So., and exhibiting the number of years during which they have continued members of it; the periods of life at which their assu. have terminated; and the ages which the surviving members had attained on the 1st of January,* 1829. *To which are added T. of the prob. and expec. of the duration of human life deduced from these documents; a statement of the disorders (as certified to the Court of Directors) of which* 4095 *persons assured have died in* 32 *years ending December* 31, 1832; *and a supplement showing the mort. of the So. for the years* 1829, 1830, 1831, *and* 1832. By way of "introduction to the T.," the author says:

> From the time when the So. was first estab. until within the last few years, it certainly was never contemplated, by those who were engaged or consulted in conducting its affairs, that the prob. of life amongst its members would afford sufficient data for constructing T. of the expectations of the duration of human life, or of the values of life annu., which might be safely available for any practical purposes; nor were the accounts arranged with a view to the exhibition of a distinct statement of the duration of the lives assured at each particular age as displayed in the following T.; although an ann. comparison of the prob. of life in the So. with those in the *Northampton* T. has been regularly made in conformity with a plan suggested by Dr. Price to the court of directors in 1776. The great value, however, which has of late years attached to the information supposed to be contained in the records of the *Equitable* So. with regard to the duration of human life, and the important measures founded upon its experience in this respect, which were proposed in the gen. court previously to the last decennial investigation, have induced the directors to give this subject their most serious attention: and under a conviction that the accounts hitherto given of the mort. which has taken place amongst the members of the *Equitable* So. *have not been stated with perfect accuracy, nor sufficiently detailed,* they have directed the minute and laborious investigation to be made, the results of which are now presented to the So.

By way of note to the preceding he gives the annexed "comparison for the year 1832," and says that the statement in Mr. W. Morgan's Address in April, 1800, was made up from the results of a regis. of this kind for the 30 years ending 31 December, 1799.

He next proceeds to describe in detail the means taken to secure a faithful record of "all the lives which have been assured in the *Equitable* So. from the time of its commencement in September, 1762, to the 1st January, 1829—a period exceeding 67 years." He, after completing his description, says:

Ages.	Number living 1 January, 1832.	Of whom died in the year.	Should have died.
10 to 19	55	0	...
20 ,, 29	249	1	4
30 ,, 39	873	4	16
40 ,, 49	1531	21	36
50 ,, 59	1909	30	63
60 ,, 69	1311	58	63
70 ,, 79	573	60	50
80 ,, 89	94	34	17
90 ,, 96	6	4	2
	6601	212	251

> A complete view is thus exhibited of the number of persons who have made assu. with the *Equitable* So. at each particular age, the number of each class who survived from year to year, so long as they continued members of the So., and the rate of mort. which has prevailed in each class distinctly, as well as amongst the whole body of assurers taken collectively. From this T., containing a complete detail of all the facts which the experience of the *Equitable* So. can furnish connected with the subject of the duration of human life, other T. may without difficulty be formed, with such modifications as on an attentive consideration of the results may be thought necessary for the purpose of applying them to practical purposes. . .

The following is a summary of the T. referred to, and hereinafter called Table **A**. The whole number of persons ins. in the So. from its commencement in September, 1762, down to 1 January, 1829, was 21,398 persons:

Of whom there continued members until death	5144	
Of whom there ceased to be members by surrender, forfeiture, or expiration of their pol.	9324	
Of whom there remained members living 1 January, 1829 ...	6930	
Total members in 66¼ years		21,398

This information was also arranged in quinquennial periods, as follows:

Ages.	Totals: Years of life.	Died.	Discontinued.	Living 1 Jan. 1829.
7 to 10	252	...	7	...
10 ,, 15	1,050	5	36	12
15 ,, 20	2,372	20	91	29
20 ,, 25	7,402	51	819	83
25 ,, 30	16,619	114	1052	213
30 ,, 35	27,526	207	1323	378
35 ,, 40	35,389	365	1392	607
40 ,, 45	38,374	425	1312	787
45 ,, 50	37,496	496	1109	944
50 ,, 55	32,550	611	922	1087
55 ,, 60	25,882	639	549	879
60 ,, 65	19,182	638	380	725
65 ,, 70	12,364	631	217	547
70 ,, 75	6,447	477	66	350
75 ,, 80	2,778	288	27	207
80 ,, 85	908	122	17	60
85 ,, 90	246	45	4	16
90 ,, 95	35	10	1	6
Total ...	266,872	5144	9324	6930

Mr. Morgan remarks hereon:

> It is obvious, therefore, that the data afforded by the experience of the So. towards a conclusive inference respecting the duration of lives of all ages are as yet very imperfect: little short of one-half of all those on whose lives assu. have been commenced have withdrawn; more than half of the remainder are still alive; *and those upon whose lives full information is afforded do not amount to one-quarter of the whole number assured.*

A second T. given contained an account of the duration of the lives of those persons *only* who, having effected ins. in the Society between Sept. 1762, and Jan. 1, 1829, either lived and continued their ins. to the close of the latter year, or died in the intervening period. It was derived from the former T. by a process which Mr. Morgan describes in detail, and the results it furnishes will be given more in detail presently. This is termed Table **B**.

Mr. Morgan says:

> In deducing the Table of Prob. and Expec. of Life from the general results in Table **A**, it has been assumed that one-half of those who discontinued their assu. between one year of age and another, completed a *whole* year; that is, one-half of them has been constantly deducted from the numbers of persons living, out of whom the deaths have been reckoned to have happened. Thus the average of *all* who have lived in the So. between the ages 30 and 40 is 62,915; the number who have discontinued their assu. between those ages is 2715; the half of this number, or 1357, being deducted from 62,915, there remains 61,558. The number of deaths between the ages of 30 and 40 has been 572, which upon a pop. of 61,558 gives the rate of mort. for that decade as 1 in 108 very nearly.
>
> This may be considered a fair correction, since some of these persons quitted the So. immediately after they had completed the age at which they are stated to have discontinued their assu.; others not until they had entered upon another year of age. With this correction, the rate of mort. which has prevailed in the So. amongst all the lives assured, taken collectively, on an average of 67 years, ending Jan. 1, 1829, will be found to be as stated in the following T.; which also contains the rate of mort. from T. **B**; and, for the sake of comparison, according to the *Northampton*, *Chester*, and *Carlisle* T.

The following is the T. referred to. It will be remembered that Table **A** includes all the lives ins. in the So.; Table **B** omits all who did not continue their ins. to 1st Jan. 1829. The mort. results in the two tables are therefore necessarily very different.

Ages.	*Equitable* Table **A**.	*Equitable* Table **B**.	*Northampton*.	*Chester*. Males & Females.	*Carlisle*.
	one in	one in	one in	one in	one in
20 to 29	139·	71·	64·	80·	132·
30 ,, 39	108·	73·	54·	71·	94·
40 ,, 49	81·	62·	42·	50·	70·
50 ,, 59	46·	40·	30·	40·	54·
60 ,, 69	24·6	22·	21·	22·⅛	24·
70 ,, 79	11·9	11·	11·	11·	12·
80 ,, 89	6·	6·	5·⅛	6·	5·7/10

Mr. A. Morgan says:

> The method adopted in the construction of Table **A** is similar to that pursued by M. Deparcieux with respect to the T. which he formed from the list of various tontines in France. This method is liable to the objection that it does not accurately represent the mort. of lives selected at any one particular age. In a body of lives of the same age, all selected as healthy from the general mass of mankind, it is obvious that the rate of mort. must be considerably less for the first 10 or 20 years after selection, than amongst those from whom they are thus chosen. As, however, these selected lives advance in age, their general health and the rate of mortality amongst them will naturally approximate to the common standard. This approximation cannot be accurately estimated if the obs. be taken from a blended mass of lives, selected at the age of 20 for instance, which have attained the age of 50, and of lives *selected at* the age 50. The rate of mort. will for the former class be less, for the latter greater, than that which occurs in either class separately. The correct method, therefore,—(if sufficient data existed)—would unquestionably be to make distinct T. from the mort. of each distinct class. The numbers of each separate class in the T. now presented are insufficient for that purpose, and there is a variance observable in the rates of mort. at different ages when estimated in this manner which renders it scarcely possible to graduate a T. from them.

There were enumerated in the detailed T. 70 ages of admission, beginning with 7 and ending with 88—but only 10 lives were admitted after completing their 67th year. The greatest age attained by any life ins. was 94. This life was admitted at age 62. A life admitted at age 88 passed out by discontinuance of the pol. at age 92. Regarding the ages generally, Mr. Morgan says:

> Of the lives assu. in the *Equitable* So., by far the greater number have been admitted between the ages of 30 and 50, and a very large proportion between the ages of 30 and 40; whilst comparatively few of those who have been admitted under the ages of 28 or 30 have continued their assu. for more than 7 or 8 years, or beyond the age of 35; it is therefore between the ages 30 and 50 that the rate of mort. is chiefly affected by the circumstance of recruiting lives selected at early ages, which have in the course of years approximated to the gen. average of mort., with other lives selected at more advanced ages.

We are next told:

> In the T. derived from Table **B**, from which the lives of all persons are excluded whose assu. have been terminated otherwise than by death, of whom the greater number were under 50 years of age, the prob. of life between the ages 30 and 50 will be found to be given considerably lower than in Table **A**. But as the numbers who have thus left the So. have been replaced by the annual admission of new members, *this table* (**B**) *may be considered as representing more nearly than Table* **A** *the mort. of a stationary body of select lives, or rather a pop. in which the waste of each year is supplied by the admission of fresh lives so as to keep the mass of those in being together, to a certain number.* It has the advantage also of being the safer T. of the two for most of the practical purposes of a life office, giving the prob. and expec. of life somewhat lower than those deduced from the mort. of separate classes, in a few cases where these latter have been sufficiently numerous to form some estimate from. . .

Then there follows, in illustration, this comparative T. of the expec. of the duration of human life according to various T.:

Ages.	*Deparcieux*.	*Carlisle*.	*Equitable*.		
			Table **A**.	Table **B**.	Deduced from the mort. of each *particular class*.
20	40·29	41·46	41·77	37·05	38·00
30	34·17	34·34	34·68	31·52	32·27
35	30·95	31·00	31·08	28·66	29·47
40	27·76	27·61	27·55	25·65	26·55
45	24·02	24·46	24·04	22·55	23·53
50	20·05	21·11	20·53	19·37	20·00
55	17·15	17·58	17·16	16·28	...
60	14·16	14·34	14·11	13·53	...
65	11·42	11·79	11·36	11·07	...
70	8·79	9·18	8·99	8·69	...
75	6·43	7·01	7·00	6·43	...
80	4·73	5·51	5·51	4·50	...
85	3·33	4·12	4·02	3·23	...
90	1·77	3·28	2·16	2·19	...

The following are the respective Mort. Tables deduced by Mr. Arthur Morgan from the data stated and designated by corresponding letters

Table **A**.				Table **B**.			
Age.	Living.	Dying.	Expectation.	Living.	Dying.	Expectation.	Age.
10	5000	36	48·318	5000	38	43·731	10
11	4964	36	47·665	4962	38	43·062	11
12	4928	36	47·009	4924	38	42·390	12
13	4892	36	46·352	4886	38	41·716	13
14	4856	36	45·691	4848	38	41·039	14
15	4820	36	45·029	4810	39	40·359	15
16	4784	36	44·364	4771	40	39·685	16
17	4748	36	43·697	4731	40	39·016	17
18	4712	36	43·027	4691	42	38·345	18
19	4676	35	42·354	4649	45	37·687	19
20	4641	34	41·370	4604	50	37·050	20
21	4607	33	40·974	4554	54	36·451	21
22	4574	33	40·266	4500	56	35·883	22
23	4541	33	39·555	4444	58	35·329	23
24	4508	33	38·840	4386	58	34·789	24
25	4475	34	38·123	4328	58	34·249	25
26	4441	34	37·411	4270	58	33·707	26
27	4407	34	36·696	4212	58	33·165	27
28	4373	34	35·977	4154	58	32·621	28
29	4339	34	35·255	4096	58	32·075	29
30	4305	35	34·530	4038	57	31·529	30
31	4270	35	33·809	3981	56	30·973	31
32	4235	36	33·084	3925	56	30·408	32
33	4199	37	32·364	3869	55	29·841	33
34	4162	38	31·647	3814	53	29·264	34
35	4124	38	30·934	3761	53	28·669	35
36	4086	39	30·217	3708	53	28·072	36
37	4047	40	29·503	3655	53	27·472	37
38	4007	42	28·793	3602	53	26·869	38
39	3965	43	28·092	3549	53	26·263	39
40	3922	43	27·395	3496	53	25·653	40
41	3879	44	26·693	3443	53	25·040	41
42	3835	44	25·994	3390	53	24·424	42
43	3791	44	25·290	3337	53	23·804	43
44	3747	45	24·581	3284	53	23·180	44
45	3702	47	23·873	3231	53	22·552	45
46	3655	47	23·174	3178	54	21·920	46
47	3608	48	22·469	3124	54	21·290	47
48	3560	49	21·766	3070	54	20·656	48
49	3511	50	21·065	3016	54	20·017	49
50	3461	52	20·360	2962	56	19·373	50
51	3409	55	19·662	2906	58	18·736	51
52	3354	58	18·977	2848	60	18·108	52
53	3296	62	18·302	2788	62	17·487	53
54	3234	64	17·643	2726	66	16·873	54
55	3170	66	16·989	2660	70	16·280	55
56	3104	70	16·340	2590	73	15·706	56
57	3034	75	15·705	2517	75	15·147	57
58	2959	79	15·091	2442	77	14·597	58
59	2880	84	14·491	2365	80	14·056	59
60	2796	88	13·911	2285	83	13·530	60
61	2708	90	13·347	2202	85	13·021	61
62	2618	91	12·789	2117	87	12·524	62
63	2527	93	12·231	2030	87	12·039	63
64	2434	95	11·680	1943	87	11·556	64
65	2339	100	11·134	1856	87	11·074	65
66	2239	105	10·609	1769	87	10·594	66
67	2134	108	10·106	1682	87	10·117	67
68	2026	111	9·618	1595	87	9·641	68
69	1915	115	9·146	1508	87	9·169	69
70	1800	115	8·699	1421	87	8·699	70
71	1685	115	8·259	1334	87	8·234	71
72	1570	115	7·827	1247	87	7·774	72

Table A.				Table B.			
Age.	Living.	Dying.	Expectation.	Living.	Dying.	Expectation.	Age.
73	1455	115	7·406	1160	87	7·319	73
74	1340	115	6·999	1073	87	6·872	74
75	1225	114	6·609	986	87	6·435	75
76	1111	109	6·236	899	87	6·009	76
77	1002	105	5·860	812	86	5·599	77
78	897	101	5·487	726	86	5·203	78
79	796	96	5·120	640	86	4·835	79
80	700	93	4·754	554	82	4·509	80
81	607	90	4·406	472	76	4·205	81
82	517	85	4·086	396	70	3·916	82
83	432	83	3·791	326	65	3·650	83
84	349	73	3·574	261	56	3·434	84
85	276	61	3·387	205	46	3·236	85
86	215	50	3·207	159	38	3·028	86
87	165	42	3·027	121	30	2·822	87
88	123	34	2·890	91	25	2·588	88
89	89	22	2·803	66	20	2·378	89
90	67	18	2·559	46	16	2·195	90
91	49	14	2·316	30	10	2·100	91
92	35	11	2·042	20	7	1·900	92
93	24	8	1·750	13	5	1·653	93
94	16	7	1·375	8	4	1·375	94
95	9	5	1·055	4	2	1·250	95
96	4	3	·750	2	1	1·000	96
97	1	1	·500	1	1	·500	97

Mr. Milne, in his art. "Mort., Human," *Ency. Brit.*, 1837, favourably reviews the T. as follows:

> Thus it appears that in this very valuable T., which had long been wanted before it appeared, and is one of the many important benefits derived by the public from the *Equitable* Assu. So., the progress of all the 21,398 lives through the different ages from 7 to 94, so long as they respectively remained insured, the respective ages at which they entered the So. and at which they went out of it, whether by death or discontinuance of assu., are distinctly shown, and the means of determining the law of mort. amongst the lives are given, even for determining it amongst those separately which were admitted at any one age, so far as their limited numbers will allow.

Mr. A. Morgan stated that the number of female lives ins. in the *Equitable* from its commencement "has been so small that the prob of life given in Table **A** of the pub. experience may be confidently taken to represent the value of lives of *males* only.

In the second part of the rep. we have the following T., "showing the disorders (as certified to the court of directors) of which persons assu. by the *Equitable* So. have died during 32 years from the 1 Jan. 1801 to the 31 Dec. 1832." This was in fact a prolongation of the T. already given in the early part of this art.

DISEASES.	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80, etc.	Total.
Accidents	...	7	...	11	9	4	5	4	40
Angina Pectoris	...	...	8	16	45	47	26	3	145
Aneurism	...	...	1	2	...	...	1	...	4
Apoplexy	1	4	25	56	129	169	86	16	486
Asthma	...	...	...	2	20	26	22	4	74
Atrophy	...	...	4	7	11	15	6	...	43
Cancer	...	...	2	5	14	15	4	3	43
Childbirth	...	...	2	2	...	...	...	...	4
Cholera Morbus	...	...	2	5	5	9	5	1	27
Consumption	4	23	63	83	81	66	18	1	339
Convulsion Fits	...	...	...	4	1	3	...	...	8
Decay (natural and old age)	...	...	...	...	10	128	241	187	566
Diabetes	...	...	...	3	2	1	1	1	8
Disorders not properly defined	...	...	9	11	20	27	12	...	79
Dropsy	1	...	10	39	67	83	50	7	257
Dropsy on Chest	...	1	3	23	52	59	42	3	183
Dysentery	...	...	1	3	5	11	11	3	34
Disease of Stomach and Digestive Organs	...	2	9	12	28	31	22	2	106
Diseased Liver	...	2	8	37	54	49	23	2	175
Disease of Bladder and Urinary Passages	...	...	3	9	25	44	41	6	128
Epilepsy	...	1	2	8	2	2	4	...	19
Erysipelas	...	1	2	7	6	7	3	...	26
Fevers, General	...	5	30	55	61	70	34	7	262
„ Bilious	...	1	5	10	10	8	2	1	37
„ Nervous	...	3	3	13	9	9	5	...	42

DISEASES.	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80, etc.	Total.
Fever, Inflammatory ...	...	3	2	6	10	5	6	...	32
„ Putrid	...	2	7	4	7	7	1	...	28
Gout	...	...	2	6	8	14	7	1	38
Inflammation of the									
„ Bowels	2	2	14	20	26	44	16	2	126
„ Lungs	...	2	12	12	41	56	45	17	185
„ Brain..................	1	4	15	16	13	12	2	1	64
„ Chest and „ Peripneumony	1	1	1	8	11	21	12	4	59
Mortification	...	...	...	2	12	14	12	6	46
Murdered	...	...	...	1	1	...	1	...	5
Palsy............................	...	1	5	15	47	84	74	9	235
Pleurisy	...	...	...	1	1	2	...	...	4
Quincy	...	...	...	1	1	1	...	...	3
Rupture of a Blood Vessel	1	...	12	19	19	22	9	...	82
Slain in War	1	1	1	1	...	...	...	...	4
Smallpox	...	...	...	...	...	...	...	1	1
Stone..........................	...	...	...	...	1	2	7	2	12
Suicide	...	1	2	6	15	5	...	...	29
Water on the Brain......	...	...	1	3	4	1	...	...	9
	12	67	266	544	883	1173	856	294	4095

Finally, this, which is called "Supplement to Table A," showing the mort. of the So. during 4 consecutive years:

Ages.	1829.		1830.		1831.		1832.		TOTAL.	
	Living.	Died.	Living.	Died.	Living.	Died.	Living.	Died.	Living.	Died.
7 to 9	...	...	1	...	...	...	...	...	1	...
10 „ 19	41	...	46	...	52	...	55	...	194	...
20 „ 29	287	4	282	2	281	2	249	1	1099	9
30 „ 39	969	3	931	11	918	7	873	4	3691	25
40 „ 49	1718	22	1668	19	1583	13	1531	21	6500	75
50 „ 59	1952	34	1932	34	1919	29	1909	30	7712	127
60 „ 69	1268	51	1267	55	1297	70	1311	58	5143	234
70 „ 79	554	45	565	47	561	44	573	60	2253	196
80 „ 89	76	14	82	18	91	18	94	34	343	84
90 „ 96	6	3	3	...	5	1	6	4	20	8
	6871	176	6777	186	6707	184	6601	212	26956	758

Mr. T. R. Edmonds's Obs. (1837).—There appeared in the *Lancet*, 28 Oct. 1837, contributed by Mr. T. R. Edmonds, a paper: *On the influence of age and selection on the mort. of the members of the Equitable Society during a period of* 67 *years ending in* 1829. Mr. Edmonds says: "The pub. of the experience of this So. has long been an object of general desire to a large class of the community. This desire has been unexpectedly gratified, and the public are now in possession of a rich fund of new materials for the solution of some of the most interesting questions regarding human mort." He offers (*inter alia*) the following obs. thereon:

> . . There had been ins. 250,618 (a quarter of a million) years of life; that is, each person admitted had, on an average, been ins. 11¾ years. The number of deaths having been 5144, the ann. mort. was 2·05 p.c., or 1 out of 49 nearly. The number who have lived and the number who have died during every year of age, have been stated; and the number so living or dying at each age have been distinguished according to ages when admitted—*a distinction never before introduced into any obs. on mort.*
>
> It has long been known that the mort. suffered by annuitants and assured lives was lower than the gen. standard. Among well-informed persons this diminished mort. has always been attributed to the influence of "selection," and not to any superiority in the lives of persons in the middle classes. In the case of annuitants, lives superior to the gen. average were perceived and selected; in the case of lives proposed for assu., those worse than average lives were rejected; at least such was the prevailing opinion. *Until the pub., however, of the present obs. of the Equitable, there existed no positive evidence that selection diminished mort.* The materials supplied by the *Equitable* serve to show that the mort. at any given age depends greatly upon the time elapsed since admission, and increases as this time increases with considerable uniformity. They also show, that excluding ins. which have endured less than 5 years, the mort. experienced in the *Equitable* has not materially differed from Dr. Price's estimate, as exhibited in his T. for Sweden.
>
> The knowledge of the number who have lived and of the number who have died during every year of age is all that is required for determining the law of mort. for any So. . . .

He then proceeds to arrange in a new form some of the facts presented by Mr. A. Morgan, and expounds the results as follows:

> By means of the total experience of the *Equitable* thus arranged, I was enabled to estab. a new and rather remarkable fact, viz. that the mort. increases uniformly as the time from admission increases. When the mort. of all the members of 10 years' standing is known, the mort. of the members of 20, or any other number of years' standing, may be calculated. An increase of 32½ p.c. in the mort., for every add. of 5 years to the time elapsed since admission, will represent in all cases the observed facts. . . . .

We shall pursue the considerations here introduced under SELECTION, INFLUENCE OF. Mr. Edmonds proceeds to remark upon another aspect of the T.:

> The experience of the *Equitable* agrees very closely, at every age above 53, with my T. of "mean" mort. . . . At ages under 53 years the agreement between the experience of the *Equitable* and

> "mean" T. is not so great. . . . The T. of "mean" mort. agrees very nearly at every age with the T. of mort. for Sweden, constructed by Dr. Price, and recommended by him as the best standard of general mort. . . .
>
> There exist several T. professedly representing the experience of the *Equitable*, all of which are founded upon a short and inaccurate verbal statement (containing no more than half a dozen numbers) made by the late Act. of the So. in the year 1800. According to these T., resting upon such a loose foundation, the *Equitable* experience agrees nearly with the *Carlisle* T. But no attempt has been made by the respective authors to confirm their T., by comparing them with the real and properly-called "experience" of the *Equitable* since pub. . .

In 1842 Mr. T. R. Edmonds contributed to the *Lancet* a paper, *On the Mort. of the Members of the Amicable and Equitable Assu. Sos.*, which we have to notice. The experience of the *Amicable* So. during the 33 years from 1808 to 1841 had been pub. in 1841. Mr. Edmonds compares the results of this and the *Equitable* T. of 1834 as follows :

> The obs. of the *Equitable* agrees with that of the *Amicable* in indicating 52 years of age as the limit dividing human life into two well-marked periods. Both these obs. being in accordance with my theory of mort., it will hence follow that the relative mort. at different ages is the same in the *Equitable* as it is in the *Amicable;* that is to say, taking any two years of age for comparison, whatever is the proportion between the mortalities at these ages in the *Amicable*, the same proportion will be found existing in the *Equitable*. The absolute mort. in the two sos., however, is not the same, the mort. in the *Amicable* at any age being 8 p.c. greater than it is in the *Equitable* at the same age. . . . This difference it is difficult to account for satisfactorily : as the classes of people observed and the times of obs. were not dissimilar, there does not appear to be any good reason for preferring one statement to the other. The only seeming advantage which the *Equitable* possesses over the *Amicable* is in the greater comparative multitude of its facts. But notwithstanding this superiority in numbers, the *Equitable* results do not better accord with my theory of mort. than do the *Amicable* results. . . .

We shall have occasion to revert to these art. under other heads.

Mr. Arthur Morgan, in a note to his third Address, delivered 5 Sept. 1850, said :

> Very exaggerated notions, I have reason to believe, prevail with respect to the profit arising from the use of the *Northampton* T. It does not appear to be sufficiently considered by those who entertain such notions, that every assu. for life is a contract for the payment of a sum of money on an event which *is sure to happen ;* and that although the anticipated payments to be made in one interval of time are by the use of the *Northampton* T. as it were lightened, a much heavier charge is in consequence accumulated on another and *later* period.

He then furnishes the following instance in illustration :—Out of 3000 persons aged 35 years each, there would survive—

To the age of.	According to the *Northampton T.*	But according to the *Equitable* Experience.	Difference in number of claims according to *Equitable* Experience T.
45	2429	2700	271 less
55	1831	2290	188 less
65	1220	1649	30 more
75	622	849	202 more
85	140	190	177 more
97	none	none	50 more

If each of these 3000 individuals were assu. in £1200 to be paid on his death, the aggregate sum of £3,600,000 must in either case be all paid in 62 years, but the distribution of the payments would be as stated below :

	Northampton T.	*Equitable* Experience.	Amount paid less *Equit.* Experience.	Amount paid more *Equit.* Experience.
In the first ten years ...	£685,200 ...	£360,000 ...	£325,200 ...	—
Second period	717,600 ...	492,000 ...	225,600 ...	—
Third period	733,200 ...	769,200 ...	— ...	36,000
Fourth period	717,600 ...	960,000 ...	— ...	242,400
Fifth period	578,400 ...	790,800 ...	— ...	212,400
Last period	168,000 ...	228,000 ...	— ...	60,800
	£3,600,000	£3,600,000	£550,800	£550,000

It appears from this statement that the claims arising out of a number of *selected* lives assu. at the age of 35 will increase gradually, and not arrive at their greatest amount until the expiration of nearly 40 years.

In the 12th Ann. Rep. of Reg.-Gen., pub. 1853, Dr. Farr includes a valuation of the assets and liabilities of the *Equitable*, based upon the return which Mr. A. Morgan had submitted to the Select Parl. Committee on Joint-Stock Cos. in 1841, of the then existing engagements of the So. Dr. Farr made his valuation by *English* T. No. 2, at two rates of interest, with a view to contrast it with a valuation made under the *Northampton* T., also at two rates of interest. The total sums ins. being £10,033,325. The following are the results :

	Valuation by *English* T.		Valuation by *Northampton* T.	
	3 p.c.	4 p.c.	3 p.c.	4 p.c.
Value of sums insured	... £6,503,789	... £5,752,401	... £6,704,929	... £5,982,107
Value of future prems.	... 2,927,789	... 2,695,542	... 2,772,149	... 2,560,619
Difference [or required amount of life ins. fund]	£3,576,000	£3,056,859	£3,932,780	£3,421,488

Mr. Peter Hardy's T. (1853).—In vol. iii. of *Assu. Mag.*, pub. 1853 (p. 366), are given under head of "Orig. T." 5 T. based upon the *Equitable* Experience, "and kindly furnished by Mr. Peter Hardy, whose name [adds the editor] we do not doubt will be received as a sufficient guarantee for their correctness." The first of the series is not an orig. T., it being simply a reprint of [omitting the expec.] T. **A** pub. by Mr. A. Morgan in 1834. The second shows the logarithm for the numbers living at each age. The results of the remaining 3 tables are blended into the following:

T. *showing the prob. of a given life existing one year; the present value of an annu. on a single life 3 p.c.; and the present value of a reversion of £100, and the corresponding prem. values on a single life at 3 p.c.*—EQUITABLE EXPERIENCE, 1834.

Age.	Prob. of living 1 year.	Value of an Assu.	Value of Rev. of £100.	Annual Prem.	Age.	Prob. of living 1 year.	Value of an Assu.	Value of Rev. of £100.	Annual Prem.
10	·9928	23·302	29·216	1·202	54	·9802	12·457	60·805	4·518
11	·9927	23·176	29·585	1·224	55	·9791	12·090	61·874	4·727
12	·9926	23·045	29·965	1·246	56	·9774	11·717	62·959	4·951
13	·9926	22·911	30·356	1·269	57	·9752	11·347	64·037	5·189
14	·9925	22·773	30·757	1·294	58	·9733	10·984	65·095	5·432
15	·9925	22·632	31·169	1·319	59	·9708	10·624	66·144	5·690
16	·9924	22·486	31·593	1·345	60	·9685	10·271	67·170	5·960
17	·9924	22·336	32·029	1·372	61	·9667	9·923	68·184	6·242
18	·9923	22·182	32·478	1·401	62	·9652	9·572	69·296	6·546
19	·9923	22·024	32·940	1·431	63	·9632	9·215	70·248	6·877
20	·9926	21·856	33·430	1·463	64	·9609	8·854	71·299	7·235
21	·9928	21·677	33·949	1·497	65	·9572	8·490	72·359	7·625
22	·9927	21·489	34·498	1·534	66	·9531	8·135	73·392	8·034
23	·9927	21·294	35·065	1·573	67	·9493	7·792	74·393	8·461
24	·9926	21·094	35·649	1·613	68	·9452	7·453	75·379	...
25	·9924	20·887	36·252	1·656	69	·9399	7·122	76·345	...
26	·9923	20·678	36·860	1·700	70	·9361	6·804	77·270	...
27	·9922	20·463	37·487	1·745	71	·9317	6·486	78·195	...
28	·9922	20·240	38·135	1·795	72	·9267	6·170	79·115	...
29	·9921	20·011	38·803	1·847	73	·9209	5·858	80·025	...
30	·9918	19·774	39·493	1·901	74	·9141	5·551	80·918	...
31	·9918	19·534	40·191	1·957	75	·9069	5·255	81·782	...
32	·9915	19·286	40·913	2·017	76	·9018	4·968	82·618	...
33	·9911	19·036	41·644	2·078	77	·8952	4·673	83·476	...
34	·9908	18·781	42·386	2·143	78	·8874	4·377	84·319	...
35	·9907	18·522	43·140	2·210	79	·8794	4·080	85·203	...
36	·9904	18·256	43·916	2·281	80	·8671	3·779	86·080	...
37	·9901	17·984	44·705	2·355	81	·8517	3·489	86·925	...
38	·9895	17·709	45·508	2·432	82	·8355	3·219	87·711	...
39	·9891	17·433	46·310	2·512	83	·8078	2·968	88·442	...
40	·9890	17·153	47·126	2·596	84	·7908	2·784	88·978	...
41	·9886	16·864	47·969	2·685	85	·7789	2·626	89·438	...
42	·9885	16·569	48·828	2·779	86	·7674	2·456	89·933	...
43	·9883	16·264	49·716	2·880	87	·7454	2·332	90·294	...
44	·9879	15·949	50·634	2·987	88	·7235	2·203	90·670	...
45	·9873	15·627	51·572	3·102	89	·7528	2·067	91·066	...
46	·9871	15·303	52·516	3·221	90	·7313	1·892	91·577	...
47	·9867	14·967	53·493	3·350	91	·7142	1·720	92·078	...
48	·9862	14·624	54·493	3·488	92	·6857	1·501	92·715	...
49	·9857	14·273	55·516	3·635	93	·6666	1·092	93·621	...
50	·9849	13·913	56·562	3·793	94	·5625	0·839	94·649	...
51	·9838	13·549	57·623	3·961	95	·4444	0·536	95·525	...
52	·9827	13·189	58·685	4·137	96	·2500	0·243	96·380	...
53	·9811	12·819	59·750	4·324	97	·0000	0·000	...	...

In vol. xviii. of *Assu. Mag.* [1874], p. 229, will be found a paper by Mr. James Valentine: *A Comparison of Reserves brought out by the use of different data in the Valuation of the Liabilities of a Life Office;* and therein the author draws attention to the reserves brought out by *Davies's Equitable* T., which, tested by the standard he has laid down, "are invariably too low." He adds, "Even when the calculations are made at 3 p c. int., this is found to be the case. If our standard, then, be near the truth, these T. [the *Carlisle* and *Davies's Equitable*] are not appropriate for valuations." We draw attention to these remarks (which were not printed when the earlier part of this art. went to press) without making any observations upon them.

In the art. "V. Statistics," 4th ed. of McCulloch's *Brit. Empire*, pub. 1854, Dr. Farr reduces the T. of causes of death given by Mr. A. Morgan in 1834 into such form as to show the deaths out of 10,000 constantly living at 4 periods of life, distributed in groups of fatal diseases—(1) according to their nature, and (2) seat. Here is his T.

No. of Obs.	I. *Diseases grouped according to their nature.*	20-40	40-60	60-80	80-110
27	Exanthemata (Smallpox 1, Erysipelas 26)	1	1·4	3	7
401	Fevers	17	21	39	53
61	Cholera and Dysentery	1	2	10	26
47	Mechanical Injuries	2	3	3	26
487	Inflammations	14	18	63	198
447	Dropsies	4	21	62	66
339	Consumption	24	18	22	7
12	Stone	...	0·1	2	14
38	Gout	0·5	1·5	6	7
43	Cancer				
807	Fragility of the Vascular System, Aneurism 4, Rupture of Blood Vessel 82, Apoplexy, Palsy	13	32	118	165
43	Atrophy	1	2	6	...
566	Feeble Vitality (decay natural & old age)	...	1	98	1230
79	Diseases not properly defined	2	4	10	...
696	Diseases not classed	11	32	92	119
4095		91	159	539	1939
	II. *Diseases grouped according to their seat.*				
850	Brain	17	36	117	170
847	Organs of Respiration	29	33	98	191
231	Organs of Circulation	6	11	28	20
407	Organs of Digestion	10	20	49	40
4	Organs of Generation (Childbirth)	0·5	0·2	...	...
148	Urinary Organs	1	4	25	59
489	Blood Skin	1	1·4	3	7
	Blood Intestines	18	28	49	79
79	Not properly defined	2	3	10	..
993	Of uncertain seat	5	20	157	1346
47	External Violence	2	3	3	26
4095		91·5	159·6	539	1939

The mort. exp. of this So. was contributed to, and formed part of the data on which *Experience* T. No. 1 was constructed; but it was *not* contributed to *Experience* T. No. 2.

EQUITY.—Taken broadly and philosophically, Equity means to do to all men as we would they should do unto us. Taken in a less universal sense, Equity is used in contradistinction to strict law. This is moral equity, which should be the genius of every kind of human jurisprudence: since it expounds and limits the language of the positive laws, and purports to construe them not according to their strict letter, but rather in their reasonable and benignant spirit. This tempering of the law by the spirit of equity has in more modern times been almost entirely disregarded; and our Courts of Equity have become mediums for the inflicting of injuries which Courts of Law in their worst aspect could never have contemplated. But the long-needed reform is at hand; we trust it may lead to the oft-talked of "Reign of Justice."

Under Equitable Relief we have already noted some of the powers and functions of Equity in relation to ins. contracts. We here have to notice some others.

In the early case of *Fry* v. *Porter*, Vaughan, C.J., referring to the practice of the Courts, said he wondered to hear of citing of precedents in matters of equity, for if there be equity in a case, that equity is a universal truth, and there can be no precedent in it; so that if any precedent can be produced, if it be the *same* with this case, the reason and equity is the same in itself; and if the precedent be *not* the same with this case, it is not to be cited, being not to that purpose. But Lord Keeper Bridgeman said: Certainly precedents are very necessary and useful to us, for in them we find the reason of the equity to guide us; and besides, the authority of those who made them is much to be regarded: we shall suppose that they did it upon great consideration, and weighing of the matter, and it would be very strange and very ill if we should disturb and set aside what has been the course for a long series of time and ages.

When a pol. issued is not in accordance with the terms of the proposal, as accepted by the directors, but is drawn up by the office in a different form, varying the right of the assured, a Court of Equity will interfere and deal with the case upon the footing of the proposal, and not of the pol.; or will compel the issue of an amended pol. upon the terms agreed upon. The Court will act the more readily in that the preparation of the pol. is the duty of the Co.—Bunyon, *Law of Life Ins.* 1868, p. 98. Cases cited in support —*Collett* v. *Morrison*, 9 Hare, 162; *Henkle* v. *Royal Exchange* Assu. Corp. 1 Vesey sen. 317; *Motteux* v. *The Lond.* Assu. Corp. (1739), 1 Atk. 545. See also *Parsons* v. *Bignold* [*Norwich Union* Life, 1846], 15 L. J. Chanc. 379; *Beaumont* v. *Bramley*, 1 Turn. & Russ. 55; and *Foster* v. *Mentor* Life, 2 C. L. R. 1405.

The Courts of Equity will interfere to restrain illegal acts, whether in an incorp. or unincorp. co. As for instance the Courts will restrain an illegal transfer of the bus. of an ins. asso., as we have shown in the case of *Aldebert* v. *Leaf*, in our hist. of the *Argus* Life. See also *Kearns* v. *Leaf*, 1 Hem. & M. 681. But where a contract has been wholly, or even partly carried through, it may be so impossible to replace the parties in their original positions, that a Court of Equity will refuse to act—and it is always at the option of the Court to interfere or not.—Re *Anglo-Australian* Assu. Co. 1 Drewry & Small, 113. [AMALGAMATION.]

The Courts of Equity not unfrequently permit arrangements beneficial to families, when a protecting pol. is effected to cover a contingency or secure a fund upon a desired event; and will deal with a pol. when effected for the benefit of the parties interested under a settlement.—*Bunyon*, who cites in support the following cases, *Hill* v. *Trenery*, 23 Beav. 16; *Beresford* v. *Beresford*, 23 Beav. 292; *Banks* v. *Davies*, 3 W. R. 187.

The Courts of Equity in Eng. comprise the Courts of the Lord Chancellor, Vice-Chancellors, and Master of the Rolls. The Supreme Court of Session in Scotland combines the functions of Law and Equity. In 1865 Equity powers were conferred on the County Courts for cases respecting sums under £500. The "Supreme Court of Judicature Act, 1873," to come into force in 1875, aims at a fusion of the principles of Law and Equity.

In the U. S. the practice is much the same as with us. This will be seen by the following summary drawn from Bliss (1872)—one of the most able writers on the Law of Ins.: Where a verbal contract for ins. has been made, Equity will, if a loss has not occurred, enforce the delivery of a pol.; and if a loss has occurred, will enforce the payment of the sum insured. And such ins. made without the issue of a pol. will, in the absence of evidence to the contrary, be regarded as made on the terms, and subject to the conditions contained in the ordinary forms used by the Co. It has been said that after all the terms have been agreed upon and a pol. prepared, if it is withheld, trover will lie against the insurer for the pol. Where a pol. having been delivered was returned for correction, but instead of that, was destroyed by the agent of the Co., it was *held*, that Equity would enforce the contract.

Equity will reform a pol. if it fails to express the intentions of the parties, even though the failure arose from ignorance of the law. But a pol. will not be reformed or corrected except upon the most satisfactory evidence of material mistake. The actual agreement and the error must be estab. by clear evidence of the understanding of both parties as to what the contract was intended to be, and they must both have intended the same thing; their minds must have met.—*Bliss*, 234.

In the recent case of *Tait* v. *New York* Life Ins. Co., before Circuit Court of U.S. for Western District of Tennessee, 1873, it was *held*:—1. A Court of Equity has no authority to decree the specific performance of an agreement in favour of a party who has failed to perform a condition which is of the essence of the contract, although prevented by its becoming subsequently illegal, or impossible by act of God. 2. A Court of Equity will not relieve a party from the effect of omitting to perform an act, although the omission was caused by subsequent illegality or impossibility arising from the act of God, where such act was merely optional, and the other party had no right to enforce its performance.

EQUITY AND LAW LIFE ASSU. SO., "for assu. the lives of persons of every profession and station wherever resident."—Founded in 1844 with an authorized cap. of £1,000,000, in 10,000 shares of £100—£5 per share paid. The Co. is incorp. under 7 & 8 Vict. c. 110.

This is one of the most successful of that small band of class offices appealing more particularly to the legal profession for support, but by no means limited to that area in the acceptance of lives.

When the Co. was first projected, a little difficulty occurred regarding its title. The first idea of its promoters was to call it the *Equitable and Legal*, but the old *Equitable* complained; the next idea was the *Legal and Equitable*, but then the *Legal and Gen.* had cause for complaint; finally the present title was hit upon as being a very happy solution of the difficulty.

An early prosp. said:

> Life assu. being now generally adopted in marriage settlements, charges upon life estates, and as auxiliaries to other securities, a very large proportion of them are necessarily effected through the legal profession; and experience shows that the members of that profession place the greatest confidence in offices of which they constitute exclusively the proprietary and administrative bodies. Such is the constitution of this So.

In estab. this So. there is no feeling of rivalry towards the two law offices already successfully carrying on bus., but it is believed that there is ample room for a third, founded upon similar principles. . . .

Interest at the rate of 3 p.c. on the paid-up cap. was to be paid up to the date of first division of profits. Proprietors were to be entitled to one-fifth of the profits; pol.-holders to the remaining four-fifths, and to parti. from payment of first year's prem.

The D. of Sett. bearing date 1 Dec. 1845, recites that whereas some time in the month of August, 1843, an Assu. So. to be called "The Legal and Equitable Life Assu. So." was projected, and a prosp. was circulated, and that on the 29 Feb. 1844, a meeting was held of divers influential persons of the legal profession for the purpose of taking into consideration the estab. of the So. This meeting was adjourned to 27 April, when it was resolved *(inter alia)*:

1. That measures be taken to form a So. under the title of "The Legal and Equitable Life Assu. So." for assu. the lives of persons of every profession or station, and for transacting such other bus. as is usually transacted by life assu. sos. 2. That the principle on which such So. be formed be a subs. cap. stock of £1,000,000. . . . 3. That the shareholders be confined to members of the legal profession. 4. That a provisional committee be formed, etc. 5. That a sub-committee be formed for the purpose of adopting such preliminary measures as might be necessary, etc.

It further recites adoption of present name; and the regis. of the asso.; and the taking of bus. premises; the allotment of shares, etc. Then:

[13] That serjeants-at-law and barristers-at-law of any of the Inns of Court in Eng. or Ireland, and members of the Faculty of Advocates in Scot., and advocates of any of the Ecclesiastical Courts or Courts of Admiralty in Eng. or Ireland, and all persons who have been admitted as such respectively, shall be qualified to take shares in the cap. of the So. and to become proprietors thereof; and attorneys, solicitors, and proctors of any Court in Eng., Wales, or Ireland, Writers to the Signet, and solicitors before the Supreme Court in Scot., and members of any of the Inns of Court in Eng. or Ireland, and all persons who may have been admitted as such respectively, and whether continuing so or not, and all other persons whom the board of directors shall consider to be connected with the law, shall also be qualified to take shares in the cap. of the So., and to become proprietors thereof, and no other persons besides shall be qualified to be proprietors of the So.

Under clause [15] James Joseph Sylvester, "of Lincoln's Inn Fields, aforesaid, Esquire, F.R.S., shall be the first and present Act. and Sec. of the So." An extraordinary gen. meeting may be called on request of 30 proprietors [21]. Holders of 5 shares for at least 6 months preceding may vote at all gen. meetings [24]. Votes on graduated scale [24]. Pol.-holders entitled to vote on questions of distribution of surplus [26]. Proprietors, being also pol.-holders, may vote in both capacities [27]. Proprietors, but not pol.-holders, may vote by proxy [35, 37]. After £8 per share has been called up by directors, an extraordinary gen. meeting, on recommendation of extraordinary board of directors, may make further calls [43]. Gen. meetings to fix remuneration of directors and auditors [44]. Extraordinary gen. meeting may remove or suspend trustees, directors or auditors [45]. Two successive extraordinary gen. meetings may make or alter laws of the So. [46]. Board may call an extraordinary gen. meeting to fill up vacancy in directors or auditors of the So. [62, 63]. Then:

[76] That it shall be lawful for the board of directors at any time to appoint and keep up so long as the board shall think fit a local committee or board of man., consisting of 3 or more proprietors of the Society, in any city or town in Gt. Brit. or Ireland, to perform such duties relating to the affairs and concerns of the So. as the board of directors shall from time to time require.

And to remove same [77], or make rules for government of same [78], etc. Then:

[86] That until the ann. gen. meeting to be held in Feb. 1848, it shall be lawful for the board of directors, out of the funds or other property of the So., to pay to the said Francis Ewart [the projector of the asso.], by quarterly payments or otherwise, an annu. not exceeding the sum of £105, as a remuneration for his services in forming the So.

No assu. to be granted to exceed £10,000, exclusive of bonus [92]. Pol. to be executed by 3 directors [93]. Rates and terms of assu. and annu. to be fixed by the directors. Then:

[96] That it shall be lawful for the board of directors, if they shall think proper so to do, but not otherwise, to make assu. on the lives of persons afflicted with chronic complaints and other disorders not attended with immediate danger, and also the lives of persons in other cases of risk to which the regular assu. T. of the So. may not extend; the terms and conditions and prems. in every such case being regulated as in the judgment of the board of directors to afford ample compensation for the increased risk. . . .

Two separate funds to be formed, viz. "The Proprietors' Fund" and "The Assu. Fund" [127]. [The details as to these funds modified in 1860.] Times and modes of calculating and declaring profits [130–1]. Power to take over bus. of other cos., and profit and loss thereon to be carried to account of Proprietors' Fund [133]. Calls [154]. Forfeiture of shares on non-payment of calls [158]. Power to obtain Act of Parl. or Charter [170]. Mode of dissolving the So. [172]. Indemnity to directors and officers [204]. No proprietor to hold more than 50 shares [205]. All shares to have the same amount paid on them [208]. As to sale of shares to board [223]. Ann. reports when approved of, and signed by chairman of meeting in testimony of such approval, to be binding on all concerned, except in case of error [238]. Funds of So. alone liable for claims of pol.-holders and annuitants [240]. The Assu. Fund to be pecuniarily liable for claims [241]. Arbitration clause [243]. The Deed is signed by 313 proprietors.

The clauses of the Deed have been modified in certain respects, as will be stated under date of alteration. It will be observed that in the Deed the Asso. is called a "So."; but it is to all intents and purposes a Co.

The applications for shares were so numerous, that, after the issue of 7000, the directors thought they were justified in demanding a prem. of £1 on the remainder, and accordingly 1984 shares were issued at such prem., which gave the Co. a reserve fund at starting.

Mr. Francis Ewart was appointed Resident Director.

The Co. had several special features, viz.—1. Persons ins. within 6 months of last birthday are allowed a diminution of half a year in the prem. charged. 2. Persons might ins. by payment of a single prem. with the privilege of withdrawing the sum paid. 3. Free pol. were issued at a small increased prem. which remained in force, although the life ins. should go to any part of the world. This latter has now become a very general provision with life offices. The second feature the Co. appears to have abandoned.

The first report of the directors was presented at the first gen. meeting held in Feb. 1848, in pursuance of the D. of Sett., and set forth (*inter alia*) that in 1845 (first year of operations) 117 pol. were issued, ins. £106,910, and yielding in prems. £3145 14*s*. 6*d*.; in 1846, 145 pol. ins. £136,685, yielding in prems. £3984 5*s*. 2*d*.; and in 1847, 145 pol. ins. £129,988, and yielding in prems. £3752 11*s*. 5*d*. By way of explanation of these figures, the Rep. says:

> The directors, feeling that the true interest of the So. would be best promoted by a cautious selection of the risks undertaken, have constantly declined all which appeared to them doubtful or speculative, preferring, by the exercise of caution, to give the So., in its infancy, a solid foundation, rather than to meet the shareholders with a large amount of bus. which might in a short time entail heavy losses.
>
> A claim, however, has been made in respect of two pol. on the same life, amounting together to £900, the proposals for which were forwarded from Ireland under circumstances of peculiar fraud and misrepresentation. Several other Life Assu. Cos. (not less than 7 or 8), by similar means, were induced to grant pol. upon the same life; and the directors, in common with the directors of those cos., have resolved to resist the claim, and are taking measures which they think likely to render such resistance successful.

The case referred to was Fitzpatrick's, which, however, never came to a hearing. Personation had been largely practised in obtaining the pol.

The first division of profits was to date from end of 1849. We shall show the results of this and subsequent investigations in a T. at the close of this art. During this year an alteration was made in clause 194, increasing qualification of directors from 20 to 50 shares. The claims during the quinquennium had been £5900, of which £1000 was re-insured.

In 1850 the Co. took over the small bus. of the *Etonian and Gen.*, established in 1847. In the same year, several of the clauses of the D. of Sett. were modified, viz. 129, under which the expenses of man. were apportioned between the ins. and the Proprietors' Fund, namely four-fifths and one-fifth; clause 130 as to quinquennial investigations; clause 131 as to apportionment of surplus; and a new clause as to payment of current or "prospective" bonus.

In 1853 the limit of shares which might be held by individual proprietors was increased from 50 to 100.

In 1859 the third investigation for surplus took place, and showed results highly satisfactory. The pol. issued in the quinquennium had been 725, ins. £792,485, thus averaging £1093 each.

In 1860 various important amendments in the D. of Sett. were made, viz.,—(C. 25) The scale of voting by proprietors was altered. (C. 74) Three directors might transact pressing bus. (C. 92) Absolute power to directors to accept or reject proposals, etc. (C. 94) First prem. to be paid before any liability incurred by Co. (C. 98) Defining powers of directors as to making ins., as to restoring lapsed pol. and payment of claims. (C. 110) Further powers as to payment or compromise of claims. (C 118) As to investment of funds. (C. 127) As to keeping accounts of "Proprietors," and of "Assu." Funds. (C. 128) Defining profits to be carried to "Assu. Fund." (C. 129) Expenses of man. to be borne wholly by Assu. Fund. (C. 130) As to times and mode of ascertaining and declaring surplus. (C. 131) As to division of profits between pol.-holders and proprietors. *In future, parti. pol.-holders to take nine-tenths of profits.* (C. 133) As to power of board to take over ins. contracts, or to amalg. with other cos.; and mode of dealing with profit or loss resulting therefrom. (C 134) Repealed. (C. 135) The Proprietors' Fund to be made up to £60,000. (C. 136) £10,000, part thereof, to be treated as a call on shares. (C. 137, 9, and 40) Relating to dividends, and payment thereof, altered. (C. 138) Repealed. All the new and amended clauses to be incorp. in Deed.

The quinquennial rep. up to end of 1864 showed the position of the Co. to be highly satisfactory. The new pol. issued in the quinquennium were 805, ins. £1,159,619, giving an average of £1440 p. pol. The *Experience* T. No. 1 was made use of in the valuation.

The quinquennial rep. to end of 1869 again showed most satisfactory results. The new pol. issued had been 977, ins. £1,735,775, yielding new prems. £57,211. The average p. pol. had increased to £1777. The immediate annu. then payable amounted to £3104 p.a. valued at £22,214. The Rep. contained the following para., which exhibits the caution employed in the man. of its affairs.

> The bal. of £144,933 here shown is greatly in excess of what might fairly have been anticipated. This is explained by the circumstance that the Society has realized in the course of the last 5 years an exceptional profit by the early falling in of some large reversions. The profit from this source has, in fact, been no less than £18,568 in excess of the 6 p.c. int. which the reversions are calculated to

> produce. There has also been realized in the same period a profit of £7622 on the Chancery Lane property. Bearing in mind that exceptional profits of this kind cannot be expected to recur, the directors recommend that, with a view to equalize the rate of bonus, a portion only of this exceptional profit be divided on the present occasion, and that the remainder be carried forward for future division.

The successive incumbents of the joint office of Act. and Sec. have been Professor Sylvester, F.R.S.; Mr. Arthur Baily; Mr. T. B. Sprague, M.A.; and Mr. G. W. Berridge.

The following table shows the main financial results of the Co. at the periods of investigation for surplus:

Year ending 31 Dec.	New Pol. issued in the year.	Insuring.	New Prems.	Total Income.	Total Pol. in force.	Total Ins. in force.	Life Ins. Fund.	Surplus dis-tributed.	Total claims paid from commencemt.
		£	£	£		£	£	£	£
1849	149	125,483	3505	17,802	542	515,254	23,298	7,272	5,340
1854	144	147,865	4602	35,912	986	951,420	101,612	25,588	29,092
1859	135	173,735	5068	54,103	1336	1,403,888	195,975	43,889	88,808
1864	190	308,645	10,666	93,369	1756	2,178,766	383,966	69,957	165,531
1869	184	370,495	13,923	134,307	2190	3,217,545	654,373	130,440	393,542

EQUITY OF REDEMPTION.—The power which *Equity* gives to a mortgagor of *redeeming* his mortgaged estate after the appointed period has gone by for repayment of the sum of money which was due on a mortgage. The following passage from Blackstone will well illustrate the subject:

> When one man borrows of another a sum of money (*e.g.* £200), and grants him an estate in fee, on condition that if he, the mortgagor, shall repay the mortgagee the said sum of £200 on a certain day mentioned in the deed, that then the mortgagee shall re-convey the estate to the mortgagor; in this case the land which is so put in pledge is *by law*, in case of non-payment at the time appointed, for ever dead and gone from the mortgagor; and the mortgagee's estate in the lands is then no longer conditional, but absolute. But here the Courts of Equity interpose; and though a mortgage be thus forfeited, and the estate absolutely vested in the mortgagee at the common law, yet they will consider the real value of the property mortgaged, compared with the sum borrowed, and if the estate be of greater value than the sum lent thereon, they will allow the mortgagor within any reasonable time to recall or *redeem* his estate; paying to the mortgagee his principal, interest, and expenses; and this privilege which Equity allows to the mortgagors is called the Equity of Redemption.

It is usual that proceedings of this character be taken within 20 years of last written acknowledgment, and before foreclosure. There are some statutes bearing upon the subject. [FORECLOSURE.] [MORTGAGE.] The mortgagee retains the insurable interest in the property until foreclosure. [INSURABLE INTEREST.]

EQUITY OF A STATUTE.—The reason and spirit of a statute, and not its mere letter.

ERA ASSU. SO. FOR LIFE, FIRE, AND ANNUITIES.—Founded in 1852, with an authorized cap. of £10,000, in shares of £1. The prosp. said:

> The principles and benefits of life assu. are now so thoroughly understood and appreciated, that an explanation of its advantages is less required than an occasional enforcement of its truths on the attention. To men constantly engaged in bus., the thought of death seldom occurs, or, if so, merely as a vague and distant alarm, regarded without terror, and dismissed without reflection. But statistics prove that every age contributes its per-centage to the general mort.; and though some epochs of life enjoy a greater immunity than others, not one can say "I am safe."
>
> To the mechanic, and all others who gain a livelihood by the work of their hands, the recollection of this fact is of vital importance; and it becomes the duty of the thinking part of the community to place it in as strong a light as possible before them. Even this, however, would be entirely useless, unless some alteration were made in the nature of life assu., suitable to their peculiar position, and adapted to their monetary resources.
>
> The directors of the *Era*, confident in the vastness of the field before them, and in the utility and philanthropy of their project, step forward to add this last link to the chain of life assu., to bring it within the reach of the mechanic and workman, to give them a participation in its benefits, and a share in its advantages. As this cannot be done except by reducing the amount of the pol., the *Era* issues them from £10 and upwards; while, by the smallest fractional add. to the poor man's payments, the small policy-holder may participate in the profits of the So. Thus it is the ardent wish of the directors that all classes should find themselves represented in the *Era*.
>
> Firmly persuaded that the elements of greatness reside in universality alone, attaining that quality has been their grand aim and object; and although the rich and great constitute so powerful a section of society, that hitherto their behests have been alone considered, yet it will be seen, on careful inspection, that with the same consideration given to their interests that other offices extend, the peculiar circumstances of the poor have neither escaped observation, nor been allowed to remain unredressed by this So.

In fire ins. also, it was part of the plan of the Co. to issue pol. for small sums, "so as to afford to the industrial classes that degree of protection for their property which has hitherto been almost exclusively enjoyed by the wealthier portion of the community." The pol.-holders were to parti. in the profits of this branch of the bus.

In the life department 85 p.c. of the profits were to be "appropriated for the benefit of the pol.-holders effecting assu. on the parti. scale" as follows: 70 p.c. in the usual forms, and 15 p.c. in the purchase of the shares of the So., "with a view eventually of entirely cancelling the paid-up cap. and converting the So. into a mut. asso." The remaining 15 p.c. to the shareholders.

The holders of parti. pol. of £500 or upwards were to be entitled to receive "a separate and independent pol. securing such bonus, without the necessity of making any payment in respect of the same."

The following constituted add. "special features":

> All the funds of the So. available will be advanced in loans to the share and pol.-holders, upon approved personal security, and upon mortgage of freehold, leasehold, and copyhold property, repayable in one amount, or by instalments, as may be agreed upon.
>
> Loans are granted to members of building sos. for short periods, for the purchase or erection of property, previous to receiving advances upon their shares; also to enable members of building sos. to maintain their share-subscriptions.
>
> The So. receives money by way of investment upon freehold or other security at an agreed rate of int. The So. receives money on deposit accounts at interest.
>
> The directors will, at the option of the assured, receive half prems. for the first 5 years; and at the expiration of such period, the assured may either pay up the arrears and int. thereon, or allow the same to remain a debt upon the pol.
>
> Pol. on which 5 full yearly prems. have been paid *will not be void by reason of the assured being unable to keep up the prems.* in consequence of any unforeseen circumstances or misfortune attending the pecuniary circumstances of the assured, as the directors have power, and will, *in all such cases*, pay the prems. thereon *for the* 3 *years next ensuing*, and charge the assured therewith.
>
> Declined lives and members of consumptive families assured at equitable rates. Special tables to suit the industrious and working classes.
>
> Claims paid immediately after proof of death, thereby enabling the representatives of the deceased at once to receive the amount assured, and thus avoid the unjustifiable practices adopted by all other offices, of reserving 3 months to pay the amount of the assu. after it becomes a claim. . . . Extra prems. for residents abroad are lower than in other offices, and founded on data.

There was also a novel feature in regard to "Deposit Assu." set out as follows:

> A person deposits with the office a sum of money, for which, during his life, he is allowed a good int.; a certain portion, or 1 p.c. of which, is devoted to an assu. on his life by the Office. For example,—a person, aged 30, deposits £1000, for which he will receive, during his life, 4½ p.c., or £45 p.a.; and 1 p.c., or £10 p.a., will be applied to an ins. on his life, which, at the age of 30, will be the sum of £400, so that, during life, he receives £45 p.a., and at his death his executors receive £1400, or, if he please, he may receive, during his life, £55 p.a., with only £1000 at death. Persons wishing to avail themselves of the above advantages should state to the office the amount they wish to deposit and their age.

This, as also the system of "bonus pol.," presented elements of real improvement in practice.

The amount of fire bus. transacted was very small.

In 1856 the Co. took over the bus. of the *Saxon* (founded 1854).

The validity of this amalg. was afterwards impeached before the Court of Chancery. The following is a brief outline of the case: The D. of Sett. of the *Era* contained powers for the gen. meetings to "discuss, and, subject to the provisions of the D. of Sett., determine upon any question, matter, or thing relating to the affairs of the Co., which should arise in the course of the conduct or the management thereof"; and empowered "the directors generally, where the deed was silent, and did not otherwise provide, to act in the direction of the concerns of the Co. in such manner as, in their absolute discretion, they should think most conducive to the interests of the So., and for that purpose to make, do, and execute all deeds, matters, or things whatsoever." V. C. Wood considered that these clauses did not authorize the purchase of the bus. of another co.; but the Lords Justices were of a contrary opinion, and thought that, the sale having taken place in 1856 and 1857, and having been confirmed by special general meetings of both cos., and acted on up to 1858, was at all events binding by acquiescence; and that if the selling co. had no power to sell, the only consequence was that the purchasers bought a property with a bad title. The amalg. was therefore confirmed, and this has become a leading case.

Early in 1858 the Co. entered into negociations for an amalg. with the *British, Foreign, and Colonial*, of which Mr. T. H. Baylis was the man. director. This arrangement fell through, and led to considerable complications, regarding which the aid of the Court of Chancery was invoked, but this time without much success. [See *Post Mag.*, 25 Dec. 1858.]

The income of the Co. from life prems. at this date was stated to be £4000 p.a.

In the same year (1858) the bus. was trans. to the *Law Property*.

Mr. Edward Curties was the founder of the Co., and Mr. Edward Moseley its Sec.

ERASURES.—By order of the late Master of the Rolls, Sir John Romilly, in 1855, no document corrected by erasure with the knife was to be henceforth received in his Court; the error must be corrected with the pen, so that the nature of the alteration may be apparent. It is so in the Army Courts. It should be so in all ins. offices, especially in the matter of proposals, applications, policies, and renewal receipts.

ERGOTISM.—An epidemic occurring in moist districts, as in that of Sologne, from the use of *Ergota*, in rye-bread. Its forms are—the *convulsive*, or nervous disease, characterized by violent spasmodic convulsions; and the *gangrenous*, a depraved state of the constitution, terminating in dry gangrene, and known in Germany by the name of the CREEPING SICKNESS.

Dr. T. L. Nichols, M.D., in his *Human Physiology the Basis of Sanitary and Social Science*, 1872, says, "Ergot, or the smut of rye, when it is allowed to get into bread, or in whisky distilled from rye, or eaten by cows, so as to poison their milk, may be a cause of disease."

ERIACH.—The Irish designation of recompense for murder.

ERITH, FRANCIS NORTON, pub. in 1854: *Stray Thoughts on Life Assu.: or the great* *principles of the modern system succinctly explained and rendered familiar.* This pamph.—which was dedicated "To Edward Baylis, Esq. (Consulting Act.), the founder of the system of modern L. Assu.: the philanthropic expounder and the advocate of a benevolent application of the surplus funds of L. assu. cos. to the assured—to the living"—contains some new thoughts, although these are frequently clothed in language too extravagant to secure the consideration of bus. men. In 1854 he projected the *Pioneer* Ins. Co., which finally became regis. as the *British Nation.* He became its Act., and was, we believe, the author of the prosp. we have reviewed at some length in our hist. of that Co. In 1856 he promoted and became Act. and Sec. of the *Constitution* Life. He is now endeavouring to animate the *Lion* Assu. Co., Lim., in his position of Man. and Act., a work in which there is plenty of scope for his undoubted ability.

ERRATIC (from the Latin *erro*, to wander).—Wandering, irregular; as applied to pains, gout, erysipelas, gestation, etc.

ERRATICUM.—A waif or stray.

ERROR IN AGE.—It has not unfrequently happened that, in filling up proposal forms for L. ins., as also for the purchase of annu., errors have been made in the statement of age. In all such cases the interests of the asso. are affected injuriously or otherwise. If, however, upon discovery of the error, the fact be communicated to the office, and the evidence shows that the error was unintentional, it is customary to allow the matter to be rectified by a cash adjustment in an equitable manner. But where a fraudulent intent is manifested, it is not unreasonable to expect the office to stand upon its legal rights. The time is rapidly approaching when there will be small excuse for the commission of any such error. The Gen. Registration Act came into force in 1837. [CONCEALMENT.] [FRAUD.] [MISREPRESENTATION.] [WARRANTY.]

ERROR IN PROPOSAL.—In all branches of Ins., errors in the proposal are more or less frequent. These as frequently arise from carelessness as from design; but it must be remembered that, from whatever cause they arise, they are equally misleading. Some excellent remarks on the subject are before us:—It is essential that the information upon which a pol. of insurance is granted should be in all respects accurate. There are, however, material errors, and immaterial errors. The spirit of the law, and of all the decisions on which it is based, is, that everything which would influence the judgment of those who grant the ins. should be disclosed. It is usually made a stipulation in the declaration attached to the proposal that this should be done. In dealing with their insurers, the offices are to a large extent guided by the moral complexion of the error. It is not necessary that there should be wilful fraud to void an ins. If the statements are untrue so as to mislead, and result in the issue of a pol. which would not otherwise have been issued, it is enough.—*Ins. Agent*, 1 July, 1874. This subject is further treated under CONCEALMENT; DECLARATION; FRAUD; MISREPRESENTATION; WARRANTY.

ERROR NOMINIS.—A mistake of detail in the name of a person; used in contradistinction to error *de personâ*, mistake as to identity.

ERROR OF FACT.—If a mistake has occurred in framing a contract, to the correction of which the pol. itself affords no clue, it cannot be corrected by a Court of Law, which will merely *construe*, but will not *reform* the contract; it can only act upon the agreement *as it is;* it cannot strike out the words employed and substitute others of a different import; nor change the language of the parties: such mistakes can only be corrected by the consent of the parties, or by a Court of Equity.

An agreement *oral* or *parol*, may explain an ambiguity or correct a mistake; but the pol. must exhibit the ambiguity or the agreement must demonstrate the mistake. The Court cannot supply an agreement that was never made, but which *one* of the parties *intended to make.* Nor, in the absence of fraud, can the Court alter a pol. as written, if it be according to the understanding of *one* of the parties, although the other did not so understand it.—*Griswold*, 1872.

ERROR OF LAW.—A mistake in the proceedings of a Court of Record in matters of law or of fact. The remedy is by Writ of Error, which authorizes the Judges of a Superior Court to examine a record on which judgment has been given in an inferior court, on an allegation of error in pleading a process, etc.; and to affirm or reverse the same. Strictly speaking it is applicable only for the reversal of judgments on account of errors in law, and not of fact. Proceedings in error must (except in certain cases provided by the stat.) be taken within 6 years. Neither death nor marriage abates the proceedings. In some cases proceedings in error may be taken direct to the House of Lords. [EXCHEQUER CHAMBER.]

ERRORS IN STATISTICS.—It is a very prevalent belief that errors in statistics will in the main rectify, or rather *nullify* each other. There are certain exceptional instances in which they may do so; but the belief as generally entertained is delusive and dangerous. This has been pointed out over and over again by various writers on statistical subjects. We feel it necessary to repeat the caution here, and to support the position by one powerful and suggestive authority.

Dr. Rumsey, in his pamph., *On Certain Fallacies in Local Rates of Mort.* etc., 1871, says:

> It is dangerous to apply to questions of local insalubrity and disease-causation the doctrine that

> errors compensate themselves in large averages. Were comparisons of rates of sickness and mort. confined to the same district, at different periods, or to similar inhabited parts of distant districts; or were there no sources of disease, constitutional or zymotic, strictly attributable to locality; or were there no particular neglects or abuses in local administration to expose; we might be reconciled, on the theory of compensation, to the inclusion of hospital and workhouse statistics in the pub. district returns. Yet, simply because some apparent diminution of death-rate in low neighbourhoods, caused by removals to hospitals, may not be greater on the whole than that in more respectable places, caused by removals to the country or the sea-side, we ought not, in the interests of the public, to *rest* satisfied with a general representation—that is, with returns which never accurately represent the relations of disease to death, or of either to pop.

ERRORS, THEORY OF.—A branch of the mathematical science of probabilities, which has engaged the attention of some of the most able investigators of that subject, including Simpson, Lagrange, Daniel Bernouilli, Trembley, Laplace, and others.—See Todhunter's *Hist. of the Theory of Prob.*

ERUPTION (from the Latin *erumpo*, to break out). A breaking out; a term applied to acute cutaneous diseases.

ERYSIPELAS (from the Greek, signifying *red skin*).—An acute specific disease characterized by fever of a low type, and a peculiar inflammation of the skin. It was called by the Latins *Ignis sacer;* while the old English designation was *St. Anthony's Fire*: either from its burning heat, or from the reputed power of St. Anthony to cure it; also the *Rose*, from the colour of the skin. There are several varieties of the disease, designated in relation to the symptoms.

This disease has engaged the attention of many of the great medical writers from Hippocrates downwards; but we do not intend to follow these. It frequently assumes an epidemic type; and of this we may give one instance.

Marshall, reviewing the causes of death during a period of 204 years ending 1831, as recorded in the Lond. B. of Mort., says: "The increase of Erysipelas also, as one of the order of Eruptive Fevers, although at present inconsiderable in its effects, is not undeserving of notice."

The year 1838 was characterized by its low temperature throughout, and its more than average moisture, although the quantity of rain that fell in the metropolis was 2⅓ inches less than the average amount between the years 1826–35; the gen. ann. fall being about 24 inches. The mean temperature of Jan. was 4° below the freezing-point; while on the average of the 10 years 1826–35 it was 4° above the freezing-point. The effect of this cold and moisture on the vegetation was very deleterious, and led Prof. Lindley to remark, that "the winter of 1837–8 was in Eng. more injurious to vegetation than any which has occurred in modern times, and it must be many years before its disastrous effects can be repaired, under the most favourable circumstances." On referring to an account of the deaths from Erysipelas for this year, we find that during all the four seasons their number was considerably above the average, and that it was more fatal among males than females. —*Haviland.*

In a paper read before the Statistical So. of Lond. in Feb. 1841, by Major A. M. Tulloch: *Comparison of the Sickness, Mort., and Prevailing Diseases among Seamen and Soldiers, as shown by the Naval and Military Statistical Reports* [*Statis. Journ.* iv. p. 1], there occurs the following passage:

> Erysipelas requires to be specially noticed in the above comparison, because it is so peculiarly prevalent and fatal on ship-board, the attacks and deaths having been at least 4 times as numerous as among the troops on shore. *Sometimes the slightest scratch or contusion will call this erysipelatous tendency into action*; and at other times it originates in a small swelling, independently of any external injury. It is generally confined to particular ships, while others, although lying in the immediate vicinity, and apparently exposed to the same exciting causes, are entirely exempt. It breaks out at sea quite as often as in harbour, and sometimes with extreme severity. Of 8 cases, for instance, which occurred on board one vessel, without the parties having previously suffered from any external injury, 3 proved fatal. This disease was much more common in former days than at present; *but the causes* in which it originates are still involved in doubt and obscurity.

The Commissioners of the Irish Census, 1851, in one of their able reports on the tables of deaths [part v. vol. i.], say:

> The deaths from this disease returned to us as having occurred from the 6th of June, 1841, to the 30th March, 1851, were 1882; the sexes being 72·5 females to 100 males. This return is 650 more than those attributed to the same cause returned in 1841. Although occasionally so epidemic as to warrant nosologists in classing it among zymotic diseases, there can be no doubt but that the great majority of the cases of erysipelas are sporadic. The distribution of the deaths from this disease has been, according to the present returns, in the rural districts, 906; in the civic, 422; in hospitals and sanitary institutions, 227; and in workhouses, 327. Compared with the deaths from all causes, it is only 1 in 723; and with the deaths from all specified diseases, 1 in 651; being greatest in the province of Leinster, and least in Connaught. But this may in part be owing to the disease being better known in the more educated districts; and also to the fact that it frequently prevails to a considerable extent in hospitals, the proportions of which are much greater in the former than the latter. The year in which the greatest number of deaths from Erysipelas occurred was 1847. The following is the result as to the inquiry with respect to seasons upon the mort. from this cause:—In autumn, 349; in summer, 444; in winter, 537; and in spring, 552. As many as 185 deaths from this cause were returned as aged under 12 months; these we presume to be cases of infantile erysipelas, an affection well known to the lower orders; the other most notable age periods were 15 and under 20, when 138 died; and 50 and under 55, when 136 died.

In the first 37 years of the *Scottish Widows*, ending 1852, 18 deaths from Erysipelas were recorded. These were distributed over every successive decenniad of life: the maximum number occurring between 40 and 60. In the 7 years 1852-9, nine other deaths of this class are recorded, making in all 27 over a period of 44 years.

In the *Standard* in the 5 years 1845–50 there were 6 deaths from this cause; and in the later 5 years, 1850–55, only 3.

In the *North British* in the 37 years 1833–60 there were 12 deaths. The average duration of life after ins. was 8 years; the average of expec. 22·85 years; the per-centage on the total mort. ·92.

Dr. Begbie, in one of his Reps. on the mort. of the *Scottish Widows' Fund*, says:

> Erysipelas has proved fatal in 8 instances in the experience of the So., and has been associated with several internal affections which have been the cause of death; more particularly with disease of the brain and its membranes, and disorders of the liver and bowels. Considering the frequency of this association, the disposition of the disease to recur from time to time, and its origin in depraved digestion and defective assimilation, I apprehend that those who have been affected by it cannot be considered as eligible subjects of life assu.

Dr. Fleming, in his *Medical Statistics of Life Assu.* 1862, furnishes the following valuable T. of mort. experience from E.:

	Number of Deaths from Erysipelas.			Per-centage of Deaths from Erysipelas:									
				On Lives at risk.			On Deaths from all Causes.						
	Eng.	*Gotha* Life.	*Scot. Amic.*	Eng.	*Gotha* Life.	*Scot. Amic.*	Eng.	*Gotha*	*Scot. Amic.*	*Scot. Wid.*	*Stand-ard.*	*North Brit.*	*Equit-able*So.
Total.	1245	17	9	·011	·012	·015	·70	·60	1·16	1·17	1·25	·92	·63

and offers the following obs. on the results shown:

> The *Gotha* and *S. Amicable* combined give ·013 on the lives at risk, against ·012 on the pop. of Eng.—a very trifling difference. The deaths from E. among the assured were 100 out of 11,661, being ·85 against ·70 among the people of England generally. The excess, it will be observed, was entirely among the assured in the Scottish offices. In Eng., the *Gotha*, and the *Equitable*, the deaths from this disease to the total deaths are pretty nearly in the same proportion.
>
> In the *Scottish Amicable* mort. E. was the cause of 9 deaths—7 males, 2 females. In 4 of the cases the head and face was the seat of the disease; in 5 the parts affected are not mentioned in the return. *There can be no doubt that in some individuals there is a constitutional tendency to attacks of Erysipelas; and such persons are certainly not admissible to assu. on the usual terms.* In none of our cases do the papers bear any reference to a previous attack, or any tendency thereto. It may be remarked that none of them appear to have supervened on any wound or surgical operation. Both the females fell within a year of their acceptance, while the males survived various periods, from 2 to 28 years.

The prudently conducted Accident Ins. Cos. protect themselves by direct provision against the consequences of death resulting from Erysipelas, which they properly enough, in view of the authorities already quoted, regard as a cause existing either within the system, or produced by a condition of body in no way necessarily or even usually dependent upon ordinary accidental injuries. The proviso in the pol. of the *Accident* Ins. Co. is as follows:

> This pol. insures against all forms of cuts . . . when accidentally occurring from material or external cause operating upon the person of the insured, where such accidental injury is the direct and sole cause of death to the insured or disability to follow his avocations; but it does not ins. against death or disability arising from rheumatism, gout, hernia, *erysipelas*, or any other disease or secondary cause or causes arising within the system of the insured, before, or at the time of, or following such accidental injury (whether causing such death directly or jointly with such accidental injury).

In the case of *Smith* v. *Accident* Ins. Co. Lim., tried in 1870, this condition was upheld. The facts may be shortly stated as follows: The insured cut his foot against the broken side of an earthen footbath. The wound was small, but bled profusely. The patient was taken to an hospital to have it dressed. Erysipelas intervened, and he died from it on the seventh day after the injury. Action was brought by the executrix against the Co. under a pol. containing the condition already recited. The plaintiff asserted that the Erysipelas was *caused* by the wound, and that but for the wound he would not have suffered it. The Co. contended that the Erysipelas was not a necessary consequence of the wound, but arose from secondary causes: as, for instance, the occupation of the ins., who was foreman to a large firm of tailors in the City, and worked for very long hours, in a close and unhealthy atmosphere. The case was made special, that the facts might be ascertained and stated. The cause was heard before the Court of Exchequer. Baron Cleasby said:

> Of the general object of the condition there can, I think, be little doubt. When an accident happens to any one, causing bodily injury, a variety of diseases may supervene, as to which it may be difficult to say whether death is caused by the disease, or by the injury sustained. To prevent the necessity of inquiry, this stipulation has been inserted to protect the Co. from liability in the case of certain supervening disorders. The pol. first provides for the accidents it is to cover,—and these it enumerates,—and then follows the proviso that the Co. do not ins. against [as quoted] . . Now these words are somewhat difficult to construe properly; but the true construction seems to me to carry into effect what I conceive to be the object of the condition. Take the case of gout. That is a disorder connected with the constitution. It might in any case be caused or not by an accident, but very often it would be very difficult to say whether it was or was not so caused; and I think this proviso was intended to meet this difficulty. The same remark applies to Erysipelas; and to hernia also, for that is, or may be, to a certain extent constitutional. All these causes are provided for, and when they, or any of them, as secondary causes, occasion death, the pol. is not applicable. . . .

Mr. Baron Channell said:

> I think the words of the condition exempt the Co. from liability where death is caused by Erysipelas supervening on an accident; and I come to this conclusion after considering the language of the first

part of the condition, which enumerates the causes for which they are to be liable, and which throws light upon the meaning of the subsequent part: *it indeed appears to me that this is just one of those cases that the Co. meant to exclude*,—where it is difficult to say whether the disease alone, or the disease jointly with the injury, was the cause of death; the condition seems framed to preclude the necessity for inquiring into the matter.

The verdict was for the Co.; and it is a most important one in its bearing for all the accident cos.

ERYSIPELAS, Deaths from (Order, Zymotic; Class, *Miasmatic*).—The deaths from this cause in Eng. present no considerable fluctuations. In 10 consecutive years they were as follows: 1858, 2026; 1859, 1954; 1860, 1665; 1861, 1542; 1862, 1523; 1863, 1920; 1864, 2104; 1865, 1963; 1866, 1675; 1867, 1450; thus showing a variation from 105 p. million of the pop. living in 1858, down to 76 in 1862, then up to 102 in 1864, and back to 68 in 1867; or taking an average of 15 years ending 1864, they were at the rate of 101 p. million.

The deaths in 1867 were: males, 797; females 653. A considerable number occur under 5 years; between 5 and 10 the numbers are very small, but gradually extend up to 65; and then decrease to extreme ages of life. The following more complete synopsis is furnished by the 33rd Rep. of Reg.-Gen.:

Deaths by Erysipelas at different Ages in Eng. in each of the 9 *years* 1862–70.

Sex.	Yrs.	Ages.																		
		All Ages.	Under 1 Year.	1-	2-	3-	4-	Total under 5 years.	5-	10-	15-	20-	25-	35-	45-	55-	65-	75-	85-	95 & upwds.
Persons.	1862	1523	458	49	36	13	7	563	29	36	43	30	70	113	143	166	182	128	20	...
	1863	1920	612	62	31	22	18	745	25	31	39	49	112	137	177	216	213	146	30	...
	1864	2104	618	55	30	15	15	733	15	22	38	61	110	171	194	274	271	180	34	1
	1865	1963	579	58	29	8	8	682	31	27	42	42	96	154	190	237	242	183	36	1
	1866	1675	527	64	26	10	10	637	35	22	33	44	73	129	146	187	159	189	21	...
	1867	1450	467	35	18	13	11	544	23	31	25	31	82	115	127	169	167	115	21	...
	1868	1952	647	60	22	13	11	753	28	20	27	45	108	139	192	200	243	169	28	...
	1869	1873	589	53	26	15	7	690	31	22	34	33	95	133	177	243	241	144	28	2
	1870	2140	685	42	18	17	10	772	34	34	38	31	98	160	211	271	285	170	36	...
Males.	1862	790	233	22	14	9	2	280	14	19	22	16	35	51	90	97	90	70	6	...
	1863	1039	302	32	12	15	10	371	9	18	19	29	58	74	108	131	123	81	18	...
	1864	1129	309	32	14	8	9	372	10	10	19	29	56	94	100	168	160	93	18	...
	1865	1047	279	25	9	6	4	323	18	14	25	18	55	81	111	148	126	114	14	...
	1866	845	235	32	13	3	5	288	20	9	25	22	35	66	86	115	61	108	10	...
	1867	797	252	15	8	6	6	287	17	19	19	13	35	70	81	95	89	61	11	...
	1868	1032	322	27	11	8	4	372	13	9	15	22	52	82	119	122	143	73	10	...
	1869	1011	310	22	12	7	2	353	17	11	13	12	41	79	106	150	135	72	22	...
	1870	1161	354	21	6	7	5	393	22	19	20	16	51	91	131	149	168	84	17	...
Females.	1862	733	225	27	22	4	5	283	15	17	21	14	35	62	53	69	92	58	14	...
	1863	881	310	30	19	7	8	374	16	13	20	20	54	63	69	85	90	65	12	...
	1864	975	309	23	16	7	6	361	5	12	19	32	54	77	94	106	111	87	16	1
	1865	916	300	33	20	2	4	359	13	13	17	24	41	73	79	89	116	69	22	1
	1866	830	292	32	13	7	5	349	15	13	8	22	38	63	60	72	98	81	11	...
	1867	653	215	20	10	7	5	257	6	12	6	18	47	45	46	74	78	54	10	...
	1868	920	325	33	11	5	7	381	15	11	12	23	56	57	73	78	100	96	18	...
	1869	862	279	31	14	8	5	337	14	11	21	21	54	54	71	93	106	72	6	2
	1870	979	331	21	12	10	5	379	12	15	18	15	47	69	80	122	117	86	19	...

ESAM, Charles, late Sec. of *Sheffield* Fire, which position he occupied from 1854 down to the amalg. of the office in 1865 with the *Alliance*. He still continued Man. of what then became a branch, and retained the position down to 1869, when he retired with the good wishes of all concerned.

ESCAMBIO (from the Spanish, *to change*).—A license formerly granted to make over bills of exchange to another beyond the sea. Abolished by 59 Geo. III. c. 49, s. 11 (1819).

ESCHEAT (from the French, *to happen*).—A species of reversion; a sort of caducary inheritance. The lord of the fee, from whom, or from whose ancestor the estate was originally derived, taking it as *ultimus hæres* upon the failure, natural or legal, of the intestate tenant's family. It differs from a forfeiture, which affects rents and profits only. Escheat operates on the inheritance. Escheat arises from default of heirs, which may be either by defect of lineage, whereby the descent is at an end (*ob defectum sanguinis*, or *tenentis* in the case of an alien); or by the commission of treason or felony (*pro delicto tenentis*)—in this latter case from corruption of blood. The following estates escheat, viz. a fee simple; an estate-tail, where the tenant in tail has in himself the reversion in fee, otherwise the estate would pass to the reversioner; and a copyhold estate.—*Wharton.*

ESCROW.—A *scroll* or writing which is not to take effect till a condition is performed, when it becomes a good deed.

In *Gilbert* v. *North American* Fire Ins. Co. before the N.Y. Courts in 1840, the facts were as follow:—Plaintiff insured a mill for 4000 dols. with defendant Co. Subsequent to the ins. and before the loss plaintiff entered into a contract for sale of the property for

16,000 dols., of which, however, 11,000 dols. was to remain on mortgage, and 5000 dols. was to remain open until the close of a controversy regarding some incumbrance on the property with another person, not the purchaser. Both the deed and mortgage were recorded as required by law, and then placed in the hands of an independent person. While so held, and before the incumbrance matter had been disposed of, a fire occurred:—*Held*, that the deed did not take effect as an operative instrument until the happening of the contingency provided for, and that the fact of its having been recorded was only *primâ facie* evidence of a delivery, and might consequently be rebutted; and that therefore these transactions did not divest the plaintiff of his insurable int. in the premises.

ESKIPPAMENTUM.—Shippage; tackle or ship furniture.

ESKIPPER.—To ship.

ESKIPPESON.—Shipping or passage by sea.

ESO-ENTERITIS.—Inflammation of the mucus membrane of the intestines.

ESO-GASTRITIS.—Inflammation of the mucus membrane of the stomach.

ESOTERIC.—A term applied to an effect produced by a cause inherent in, and proper to, the system. [EXOTERIC.]

ESSEX ECONOMIC FIRE INS. CO.—Founded at Chelmsford, Essex, in 1824, with an authorized cap. of £40,000, in 2000 shares of £20, upon which £5 had been paid up.

The Co. was estab. by the millers, farmers, etc., in the county. For many years it ins. the corn-mills driven by water-power in the county at 3*s.* p.c.; and in the surrounding counties at 5*s.* p.c.: while dwelling-houses, brick and tile, were charged but 1*s.* p.c.; and their contents 1*s.* 6*d.*; thatched dwellings at 3*s.* p.c. At these rates the Co., which was under very careful and economic management, paid for many years excellent dividends. It was only when the Co. went into more special risks that its downfall was brought about. The losses on farming stock were also heavy.

The several Secs. of the Co. were Mr. John Chandler, Mr. Edward Copland, Mr. J. K. Leake, Mr. G. U. Smith.

In 1857 the bus. was trans. to the *Manchester* F. The shareholders were paid off at par, and the surplus divided amongst the pol.-holders.

ESSEX, MORTALITY TABLE FOR THE COUNTY OF.—In Mr. Rickman's report on the Pop. 1831, he gave a Mort. T. for this county, by way of specimen of the T. which might be constructed from the returns of the Census taken in that year. He says:

> Essex has been selected as a specimen of the manner in which this sort of information may be brought under the eye without confusion; and because in that county the improvement in health in the marsh districts is well exemplified. Camden's description of habitual disease in the marshes from Barking to Tilbury is now inapplicable; and even the Eastern "Hundreds of Essex" will be seen to have rivalled the rest of the county in healthfulness during one of the quinquennial periods—1816-20.

The following T. was "calculated upon the ages of 93,333 persons—of whom 47,710 were males, and 45,623 females—buried in the county of Essex during 18 years, 1813-30." In the orig. the sexes were given distinguished as well as combined. We propose to give the combined results only.

ESSEX, COUNTY OF, MORT. T. FOR.

Age.	Living.	Died.	Age.	Living.	Died.	Age.	Living.	Died.	Age.	Living.	Died.
0	10,000	1994	26	5195	83	52	3384	75	78	900	108
1	8,006	488	27	5112	83	53	3309	65	79	792	82
2	7,518	319	28	5029	78	54	3244	67	80	710	123
3	7,199	205	29	4951	71	55	3177	87	81	587	69
4	6,994	153	30	4880	79	56	3090	84	82	518	83
5	6,841	109	31	4801	59	57	3006	73	83	435	65
6	6,732	98	32	4742	69	58	2933	74	84	370	94
7	6,634	90	33	4673	64	59	2859	67	85	276	57
8	6,544	71	34	4609	61	60	2792	122	86	219	46
9	6,473	66	35	4548	73	61	2670	68	87	173	38
10	6,407	64	36	4475	76	62	2602	91	88	135	33
11	6,343	55	37	4399	65	63	2511	100	89	102	22
12	6,288	55	38	4334	70	64	2411	94	90	80	24
13	6,233	61	39	4164	59	65	2317	105	91	56	11
14	6,172	58	40	4205	86	66	2212	110	92	45	12
15	6,114	66	41	4119	52	67	2102	100	93	33	9
16	6,048	71	42	4067	72	68	2002	97	94	24	5
17	5,977	74	43	3995	55	69	1905	76	95	19	5
18	5,903	86	44	3940	64	70	1829	157	96	14	4
19	5,817	86	45	3876	75	71	1672	86	97	10	3
20	5,731	88	46	3801	64	72	1586	114	98	7	2
21	5,643	86	47	3737	66	73	1472	111	99	5	2
22	5,557	95	48	3671	74	74	1361	109	100	3	2
23	5,462	91	49	3597	62	75	1252	120	101 to 110	1	1
24	5,371	91	50	3535	94	76	1132	113			
25	5,280	85	51	3441	57	77	1019	119			

The compiler of the T. offered the following obs. concerning it:

> It was impossible to calculate and arrange the foregoing T. without remarking the excess of mort. which falls upon the decennary years, especially on 60 and 70; which are regularly double in amount, as compared to the preceding and to the succeeding years. Hence the tendency to speak in round numbers may be estimated with considerable accuracy: 1 person in 4 who died at 59 or 61, at 69 and

71, being thereby transferred to 60 and 70; so that in 12 burials 1 is subtracted from each 4 who die on each side of 60 and 70, and added to the 4 who really die at 60 and 70.

We have not thought it necessary to add the col. of corrections so made. Again:

> It would be improper, and even liable to censure, were this subject to be dismissed without noticing that it is held to be of importance in the application of a T. of mort. that the actual pop. of every year throughout the period embraced in such T. should be known. . . .

He then furnishes an approximate T. of the pop. We hope the time is not far distant when the Reg.-Gen. will be able to furnish periodically a mort. T. for every county in the U. K.

ESSEX MUTUAL CATTLE INS. SO.—This Co. was projected in 1851, by Mr. Robert Baker, the well-known Essex agriculturist of that period, and eleven others. It did not go forward as an independent co., but its connexions at an early date merged into the *Agriculturist*, of which we have already given a hist.

ESSEX POISONINGS.—The series of crimes thus designated occurred in Essex in 1848–49, mostly in parishes in Tendering Hundred, bounded on three sides by Colchester, Manningtree, and Harwich. The poisonings were by arsenic, administered to persons in humble life, in view of obtaining the funeral allowance from the clubs to which the men belonged. The principal culprit was Mary May, who was afterwards executed at Chelmsford for these crimes. The regis. of death without the production of a medical certificate greatly facilitated the operations of the criminals. [NORFOLK POISONINGS.] [COTTON, MARY ANN.]

ESSEX AND SUFFOLK EQUITABLE INS. SO.—Founded in Colchester, Essex, in 1802, on the mutual principle, under the title of the *Essex Equitable*. In 1806 it took the add. title of "Suffolk," rendering the name as it now stands. It paid in duty in 1805, £1036 9*s.* 4*d.*; in 1831, £6490 7*s.* 4*d.*; its later development will be shown in our fire duty returns.

The bus. of the So. is chiefly confined to Essex and the adjoining counties. It has been managed with great prudence under the supervision of a board of directors selected from the gentlemen of the county, many of whom are large insurers in the So. It holds a very considerable amount of farming stock ins.

The plan of the So. is to distribute its profits among the pol.-holders of five years' standing. The bonus returns have equalled 30 p.c. of the prems. paid for many years. There is a proprietary branch for those persons who desire it. The returns made to members on the mut. plan up to the 31 Dec. 1868, had reached £162,226. The present Sec. is Mr. Robert Anderson.

ESSOIGN.—In Law, an excuse for one who is summoned to appear and answer an action or perform suit in a court, etc., by reason of sickness or other prevailing cause.

ESTATE (from the Latin *status;* from the French *état*).—This word, as used by Law-writers, has a much more comprehensive signification than it has in common parlance. When a person speaks of his *estate* in ordinary language, we understand simply a certain portion of land, a certain mansion, or a certain number of houses to which he applies this term; but in legal phraseology we understand by the word *estate* not merely the *corporeal substance* of lands and tenements, but the *interest* which one has in them. Preston defines the word *estate* to be "the interest which any one has in lands, or in any other subject of property," and this is how the word is generally understood by Law-writers. In view of the frequent requirement of actuarial valuations of the varied interests arising out of estates in land and property, we propose to give an entire summary of the various known estates, taking Blackstone for our authority:—

I. The quantity of interest or duration divided into:

(A) Freeholds of inheritance, which are subdivided into (A) absolute or fee-simple, (B) limited fees; which are (*a*) qualified or base fees, and (*b*) fees conditional at the common law (afterwards called fees-tail, in consequence of the stat. *de Donis*), which may be (*i*) general or special, (*ii*) male or female, (*iii*) given in frank-marriage.

(B) Freeholds not of inheritance, subdivided into (A) conventional, or created by the act of the parties: they are (*a*) estates for one's own life, (*b*) estates *pur auter vie*, (*c*) general grant, without expressing any term at all. (B) Legal, or created by operation of law: they are (*a*) tenancy in tail after possibility of issue extinct, (*b*) tenancy by the courtesy of England, (*c*) tenancy in dower.

(C) Estates less than freehold, subdivided into (A) estates for years, (B) estates at will, (C) estates at sufferance.

(D) Estates upon condition, subdivided into (A) estates upon condition implied, (B) estates upon condition expressed, and these are either precedent or subsequent: (*a*) precedent, which must be performed before an estate can vest or be enlarged; (*b*) subsequent, by the failure or non-performance of which an estate already vested is defeated; such (*i*) estates held *in vadio*, gage, or pledge, which are of two kinds—*vivum vadium*, or living pledge or vifgage, and *mortuum vadium*, dead pledge or mortgage; (*ii*) estates by statute merchant or statute staple; (*iii*) estates by *elegit*.

II. The time of enjoyment, either (A) in possession, or (B) in expectancy; subdivided into (A) remainders, created by convention of parties, and are (*a*) vested, (*b*) contingent, or executory, (*c*) cross; (B) reversions arising by operation of law.

III. The number and connexion of the tenant, either (A) severalty, (B) joint tenancy (C) coparcenary, (D) common, (E) entireties.

These several estates will be found spoken of under their several heads. They may each in their turn become the subjects of actuarial valuation.

There is a case in the American law-books, of which we have no date or reference at hand, wherein an administratrix took a fire pol. on "the *estate* of Daniel Ross"; and it was *held*, that the words used were intended to designate the *persons* holding the legal title; and to speak of the property left by the deceased person, including the real property, especially before a final settlement of his affairs, as his estate; and which, if not accurate, was not an unusual designation; and the Court was of opinion that the interest both of the administratrix and of the heirs in the insured property was covered by the pol.—*Griswold*, p. 412.

ESTATE AD REMANENTIAM.—An estate in fee-simple.

ESTATE AGENTS, AUCTIONEERS, SURVEYORS, AND GEN. INS. CO., FOR LIFE, FIRE, AND GUARANTEE INS., was prov. regis. 5 Nov. 1849, but never completely regis. It was revived again some ten years later, viz. 1859, as the *Auctioneers*, etc.

ESTATE OF INHERITANCE.—In Law, an estate in fee-simple, or fee-tail.

ESTATE TAIL (from the French *tailler*, to cut or to carve).—An estate of inheritance, descendable to some particular heirs only of the person to whom it is granted; in contradistinction to an estate in *fee-simple*, which is an estate descendable to the heirs general (without distinction) of the person to whom it is granted.

An estate tail is of two kinds—*general* and *special*. When lands are given to a man and the heirs of his body without any further restriction, this is called an estate tail general; because, how often soever such donee in tail be married, his issue by every marriage is capable of inheriting the estate tail. But if the gift is restrained or limited to certain heirs, exclusive of others, this is an estate tail special; because the issue of the donee by any other wife is excluded.

Estates tail are also distinguishable into *estates tail male*, and *estates tail female*. When lands are given to a person and the heirs *male* of his or her body, this is called an estate tail male, and to which the female heirs are not capable of inheriting. The person who holds an estate tail is termed a *tenant in tail*. And when a person grants lands to a man and his particular heirs in the manner above described (*i.e.* when he creates an estate tail), such person is said to *entail* his lands.—*Cruise; Blackstone.*

In 1833 was enacted the 3 & 4 Wm. IV. c. 74, under the provisions of which an estate tail may be barred.

Actuaries are called upon to value from time to time even the most remote interests under entailed estates.—See Mr. Bunyon's papers in vol. xviii. of *Assu. Mag.* p. 1.

ESTATES FOR LIFE.—In Law, a freehold interest in lands and tenements, whether enjoyed for the life of the tenant, or for the life of another party—in which latter case it is termed an estate *pur auter vie*. This species of interest includes estates granted for an uncertain period, *limited within the duration of a life;* as for instance, an estate granted to a widow during her widowhood.

An estate for life is created whenever lands or tenements are given by means adequate to the conveyance of a freehold, without any express limitation of an estate.

By the Stat. of Frauds—29 Ch. II. c. 3, s. 12 (1676)—estates *pur auter vie* are devisable [previously they were not]; and if there be no special occupant, they go to the executors or administrators of the deceased.

ESTATES FOR YEARS.—In Law, an estate limited for a term of years, or other determinate time, in lands, tenements, or hereditaments, is a chattel or personal interest; and on the death of the owner, devolves, like other personal property, on his executor or administrator. An estate for years is properly created or *demised* by an instrument termed a *Lease;* which at Common Law has not full operation until the entry of the tenant. It may also be created by declaration of use, or by devise in a will; and may be made either to commence immediately or on a future day and event: in which latter case, unless there be any particular estate to support it as a remainder, it is called an *interesse termini*, until the time arrives for its reduction into possession. Covenants between the lessor and lessee relating to the land (which are usually inserted in the lease) are said at Common Law to run with the land: they pass along with the term of years, to a party to whom the lessee conveys it by assignment; but the lessee's covenants do not pass to a party to whom he conveys part of the term by underlease. A tenancy from year to year is a species of estate for years.—*Brande.*

ESTIMATE.—Computation; particularly an approximate calculation of the prob. cost of any undertaking of work to be done, of the quantity of materials required, etc.

In the case of damage to buildings by fire, an estimate of the cost of replacement is usually required as a means to the adjustment of the loss. So in Marine Ins., in case of damage to vessel or goods, an estimate is required, not only in view of the settlement of loss, but even in many cases to determine whether it falls upon the underwriter at all.

In the Ins. Ordin. of *Stockholm*, 1750, there is the following regulation: art. 14.—1. In case of any damage to the ship itself, and its apparel, before any *repair* is begun, it shall, according to the proper nature thereof, be surveyed and estimated, by a creditable ship-builder, and sail-maker, and likewise by some skilful masters present at the place where the misfortune happened. In the want of such persons, others of good character, and expert in such matters, shall be desired to draw up and sign a just valuation, which must be confirmed by a sentence of the nearest magistracy or other competent tribunal, according to the usage of such place.

ESTIMATES, Actuarial. See Actuarial Estimates.

ESTIMATING Premiums (Fire).—When *short ins.* calls for any number of days less than a month, the prem. should be estimated by the *rate for days*, as given in T. of short rates. If over 2 days, and less than 5, charge for 5 days; if over 5, and less than 10, charge for 10; and so on up to months.

In cases of "time undeclared," when the risk ceases, and the prem. is to be estimated, unless otherwise specifically agreed upon, the T. of short rates should be used, whether for days or months.—Griswold's *Fire Underwriter's Text Book*, 1872.

ESTIMATING Profits on Merchandize (Fire).—The mode of arriving at profits on sales, for the purpose of correct adjustment, is ordinarily by estimate, as few parties keep their books of account in such a manner as to be able to indicate the rate p.c. of their profits correctly. The larger the ratio of profit allowed, the smaller will be the amount saved to the credit of the Co., and *vice versâ*.

The *modus operandi* of arriving at the cost of merchandize, at an estimated rate p.c. of *profit*, when only the amount sold is given, is the same as used by bankers in calculating interest and discount. The result can be obtained by either of two processes, which may be designated as the *aliquand*, and the *aliquot* process: the former is applicable to any given rate; this latter only to an aliquot, or even part of 100.—*Griswold*. [Profits, Ins. of.]

ESTOPPEL (from the French, *to stop*).—In Law, an impediment or bar to a right of action, arising from a man's own act or from an act in which he has concurred. It implies a conclusive admission, which cannot be denied or controverted; and which may be in either of three forms—1. By matter of record. [illegible] By deed. 3. In *pais*, as that a tenant cannot dispute his landlord's title. In either of these forms it may be a bar to legal proceedings. In the U.S. Law Courts it seems much more usual to plead estoppel than in our own; and a number of interesting cases appear in the works on Ins. Law there. These we do not propose to follow here.

ESTREAT.—The true extract, copy, or note, of some orig. writing or record.

ESTREPEMENT.—Any spoil or waste made by a tenant for life, upon any lands or woods, to the prejudice of him in reversion.

ESTUARY.—Those parts of the channels of certain rivers in which the ebb and flow of the sea is distinctly perceptible, and there is little or no current.

ET Cetera, &c.—The formula "etc." has been held to cover and include everything of the same, or a similar kind or nature. Lord Coke defined "etc." as meaning whatever else *ought* to have been expressed. Where a F. pol. covered "stock of watches, watch trimmings, 'etc.,'" it was *held*, to include the entire stock of the insured, consisting of plate, silver ware, tools of trade, and such other goods as form a part of similar stock in Boston, U.S.—*Griswold*.

ETHERWILL, George Octavius, was one of the promoters, and afterwards became Man. Director of the *European Alliance Full-Pay*, etc., Ins. Co. 1852.

ETHNOLOGY.—This is one of the main divisions of Anthropology, and is defined as the science "which determines the distinctive characters of the persistent modification of mankind, their distribution, and the causes of the modifications and distributions." The study of the relations of the different divisions of mankind to each other is of recent origin. Balbi's *Ethnographic Atlas* was pub. in 1826. Pritchard's great work, *Researches on the Physical Hist. of Mankind*, was pub. in 1841-7. Dr. R. G. Latham's work on the *Ethnology of the British Empire* appeared in 1851-2. Prof. T. H. Huxley gave courses of lectures on Ethnology at the Royal Institution, London, May and June, 1866-7.

The Ethnological So. was founded in 1843, and pub. *Trans.* In 1871 it was amalg. with the Anthropological So. under the new name of Anthropological Institute. The Proceedings contain many papers of great value. [Life, Human.]

ETNA Ins. Co. Lim., Fire and Marine, The.—Founded in Dublin in 1866, with an authorized cap. of £500,000, in 50,000 shares of £10 [afterwards increased to £1,000,000], of which, however, it in the end turned out that only a comparatively small proportion had been subscribed. The prosp. said:

> This Co. is formed for the purpose of extending the ins. against loss or damage by fire, of merchandize, buildings, farming stock, etc., throughout Ireland, Gt. Brit., and the Colonies; also the ins. against loss or damage by fire or water, upon all ships of every class or denomination, and upon cargoes or merchandize therein, in all home or foreign ports.
>
> The principal offices of the Co. are in Dublin. The Co. will be efficiently represented in Ireland, throughout the provincial districts of which a large number of agents are ready to commence bus.
>
> There is now being organized in Lond. a board of directors, to superintend the bus. in E. and W., and a similar board in Edin. or Glasgow will superintend the bus. in Scotland: a large number of agents have been retained in these parts of Gt. Brit., so that the *Etna* Ins. Co. can be said to possess a staff of agents, the preliminary expenses of which have been avoided in this respect, and it is questioned whether any office has hitherto commenced bus. with more favourable prospects.
>
> Calculations have been made, showing that not over one-third of the insurable property of Gt. Brit. and I. is covered by ins. against fire; that the excessive duty of 3*s*. p.c. has prevented parties from ins. Now that the duty has been reduced to 1*s*. 6*d*. p.c., a large accession of bus. cannot fail to flow into the offices. The success of a new co., well and economically managed, cannot be doubted. The directors propose that this Co. shall be pre-eminently distinguished by—(1) the utmost liberality in

> dealing with the insured; (2) the prompt settlement of claims; (3) economy consistent with efficient management. The public are certain to appreciate the advantages of a co. holding out such inducements.

Then, addressing itself particularly to the land of its adoption, it said:

> That there is room for a new fire office has been already shown. Eng. has 50 offices transacting fire bus; Scotland possesses 9; whilst in Ireland only 2 exist, and these 2 were started upwards of 40 years ago. It is further shown that there is ample room in Ireland alone, from the fact that whilst the duty paid to Gov. in 1863 on Irish fire ins. exceeded £84,355, the Irish offices only contributed £12,540,—not one-sixth part,—the difference, £71,815, having been contributed by the Eng. and Scotch offices doing bus. in Ireland. The increase of duty in Ireland alone during the last 12 years is £30,422. Two reasons are deemed sufficient to account for the smallness of the bus. transacted by the 2 Irish offices: the one, that few agents have been appointed to procure bus.; the other, that the bus. is not extended beyond Ireland, whilst agents are well known to be the support of offices, and that E., W., and Scotland are the finest fields in the whole world for F. Ins. The *Etna*, therefore, will employ, and has secured agents in nearly every important district in these countries, as well as in Ireland. It is hoped these advantages, amongst others, applied by an efficient and highly influential directorate, will have the effect of causing the bus. of this Office within a short period to exceed the most sanguine expectations of its founders.

Returning to the general subject of F. Ins., it proceeds:

> A source of great expense, if not of positive loss to F. cos., is the practice of encouraging the transference of bus. from one office to another, free of expense. Parties ins. in this Office are not likely to change from it, as the directors have resolved to allow a reduction on all prems., provided a claim has not arisen under the pol. entitled to this benefit. To effect this, after providing for claims, expenses, etc., and for a reserved fund, a division of profits will take place every 3 years, and be distributed to those pol. entitled to receive a portion of it.
>
> The rates for ins., with those advantages, will not be greater than those charged by all other well-conducted cos.

As to Marine Ins., it said:

> As a further proof that Marine offices are wanted, the rapid growth of our imports from £178,000,000 stg. in 1859, to £270,000,000 stg. in 1864, and our exports during same period from £138,000,000 stg. to £190,000,000 stg.; to this consideration may be added the fact of the immense fleets of new vessels of every description which are being annually raised, to say nothing of the millions of specie which are now constantly crossing and re-crossing the seas. Surely these 2 tables [T. of the price of shares in successful cos.] will prove to the most sceptical that the *Etna* is entering upon a field of labour which has proved profitable to its predecessors. It is therefore reasonably anticipated that the shares of the Co. will in a few years bear favourable comparison with those of other cos.

Finally:

> *A large number of the shares have already been disposed of*, so that early application will be necessary for those remaining.

The Co. obtained the names and influence of a highly respectable board of directors in Dublin.

In 1867 it took over the F. bus. of the *European* No. 2; and in 1868 the bus. of the *General Provident*.

The Co. soon after this period began to be involved; and a petition to wind up the same was presented in Lond. towards the end of 1868; but as the Co. was regis. in Ireland, no order could be made on the petition of an English creditor.

Towards the close of same year (1868), the entire bus. of the Co. was trans. to the *United Ports and Gen.*, then just estab. The *Etna* Co. passed into winding-up under the Irish Courts; and is, we believe, still undergoing that process.

Mr. John Innes was the Founder and Sec. of the Co.

ETONIAN AND GENERAL LIFE ASSU. AND ENDOWMENT SO. FOR ASSU. THE LIVES OF PERSONS IN EVERY STATION.— Founded in 1847, with an authorized cap. of £50,000, in 5000 shares of £10. The special feature of the Co. was its Deposit Branch.

> Peculiar facilities for investing the savings will be given to the assured, to which the directors beg to call particular attention. The assured will be allowed to employ their savings (to any extent not exceeding the sum assured) in making payments in advance in respect of their pol., and they will receive compound int. at the rate of 4 p.c. p.a. on the excess of their payments over the sum actually due to the So. These savings may be invested in small or large sums, without expense, and the amount over and above the prems. actually due may be withdrawn at any time, upon such notice as may be agreed on at the time when the payments were made.
>
> Again, the So. will give for any sum deposited £2 p.c. int., as well as allow the depositor to hold a pol. of a value proportionate to the amount of the deposit; the whole or part of which may be withdrawn by giving 3 months' notice to that effect in writing, and by surrendering an equivalent part of his pol.; or the amount of the deposit, and consequently the value of the pol., may be increased by subsequent add., after due inquiries as to the state of health at such respective periods.

The prosp. contained the names of a long list of patrons and trustees, many of them men of influence, and mostly old Etonians. The ordin. bus. of L. Ins. was to be transacted; and the only special feature in the scheme was "The Eton Fund":

> In connexion with this So., and under the immediate superintendence of the board of directors, is estab. the Eton Fund, for the support and assistance of those old Etonians whom ill-health or misfortune may have deprived of the means of livelihood. The Fund will be formed by donations, contributions, and by the deduction of a small per-centage, according to the prosperity of the So., from the profits of pol. effected *in the Etonian Department only*. From the support which has been already promised, there is every reason to hope that in a short time the Fund will be maintained by donations and subs. alone.

The Co. transacted a small bus. only, and in 1850 that bus. was trans. to the *Equity and Law*. The Act. was the Rev. M. O'Brien, Professor at King's College, Lond. The Sec., Wm. Percival Pickering.

EUCALYPTUS GLOBULUS.—See DISEASE-DESTROYING TREE.

EUCHROIA (from the Greek).—Goodness of complexion; healthy look—as opposed to want of colour.

EUDIOMETER.—An instrument employed about the year 1770 by Cavendish, for exhibiting the synthesis of water. It serves to determine the degree of purity of the atmosphere, and to indicate the proportion of oxygen in a given gas.

EULER, LEONARD.—One of the most able and learned mathematicians the world has yet seen. He was born at Basle in 1707, and educated in Switzerland. He became in very early life the pupil and friend of John Bernouilli, and contracted also a lasting friendship with his two sons, Nicolas and Daniel. On these latter being invited to St. Petersburg, on the founding of the Academy there by Catherine the First, they promised Euler that they would endeavour to procure his settlement in the same city, which they did, and he became a Professor at the University there, prob. about 1728.

Hutton tells us that at his first setting out in his new career, he enriched the academical collection with many memoirs, which excited a noble emulation between him and the Bernouillis; an emulation that always continued, "without either degenerating into a selfish jealousy, or producing the least alteration in their friendship." It was at this time that he carried to new degrees of perfection the integral calculus, invented the calculation by sines, reduced analytical operations to a greater simplicity, and thus was enabled to throw new light on all the parts of mathematical science.

In 1730 M. Euler was promoted to the Professorship of Natural Philosophy; and in 1733 he succeeded his friend D. Bernouilli in the mathematical chair.

In 1741 he was invited to Berlin, to direct and assist the Academy that was there rising into fame. On this occasion he enriched the last vol. of the Miscellanies [*Mélanges*] of Berlin with five memoirs, which form an eminent, perhaps the principal feature, in that collection. These were followed, with amazing rapidity, by a great number of important researches, which are dispersed through the memoirs of the Prussian Academy. The labours of Euler will appear more especially astonishing, when it is considered that while he was enriching the Academy of Berlin with a profusion of memoirs on the deepest parts of mathematical science, containing always some new points of view, often sublime truths, and sometimes discoveries of great importance, he still continued his philosophic contributions to the St. Petersburg Academy, whose memoirs display the marvellous fecundity of his genius, and which granted him a pension in 1742. We can only notice a few of his more prominent productions.

In the *Histoire de l'Acad. Berlin* for 1751 appeared a memoir entitled *Calcul de la Probabilité dans le Jeu de Rencontre.* Of this we have spoken under CHANCE, LAWS OF.

In the vol. of the same series for 1760 appeared a memoir: *Recherches générales sur la Mortalité et la Multiplication du Genre Humain.* This contains some simple theorems concerning the mort. and the increase of mankind; leading up to the consideration of annu. for lives, concerning which he gives some formulæ. His examples are based upon Kerseboom's T.

In the same vol immediately following is a memoir entitled *Sur les Rentes Viagères.* Its principal point is a formula for facilitating the calculation of a life annu. This formula was similar to that of De Moivre and Simpson for ascertaining the value at any age from the value at the age immediately preceding. He furnishes a T. exhibiting the value of annu. on any age from 0 to 94 calculated by these means. He was of opinion that the temptations did not appear sufficient to induce many persons to buy annu. on terms which would be advantageous to the sellers. He suggests that *deferred* annu. might perhaps be more successful. He pointed out the great necessity that the sos. granting annuities should be founded on sound principles, and managed with prudence.

In 1760 he pub., apparently as a distinct work, *Recherches sur la Mortalité et la Multiplication du Genre Humain, et sur les Rentes Viagères,* wherein he enlarges upon the topics discussed in the last-named paper.

In the vol. of Berlin series for 1764 he furnishes a memoir, *Sur l'Advantage du Banquier au Jeu de Pharaon,* wherein he solves the same problem that had been solved by Montmort and Nicolas Bernouilli, making no reference to them or any other writer. He gave a new form, however.

In the vol. of the same series for 1765 there is a memoir: *Sur la Probabilité des Séquences dans la Lotterie Génoise.* In the vol. for 1769 there is another: *Solution d'une Question très-difficile dans le Calcul des Probabilités.* [LOTTERIES.]

In 1766, in the midst of the prosecution of these arduous studies, Euler had become blind; but neither the loss of his sight, nor the infirmities of old age, could quell the ardour of his genius.

Euler had engaged to furnish the Academy of St. Petersburg with as many memoirs as would be sufficient to complete its acts for 20 years after his death. In the space of 7 years he transmitted to the Academy about 70 memoirs; and above 200 more left behind him were revised and completed by a friend. Such of these memoirs as were of ancient date were separated from the rest, and form a collection that was pub. in 1783 under the title of *Analytical Works.—Hutton.*

Euler died in 1783, aged 76.

In the 2nd vol. of *Opuscula Analytica*, pub. 1785, there is a memoir connected with Life Ins., which we shall notice under that head; and also a further memoir connected with Lotteries. [LIFE INS.] [LOTTERIES.]

Todhunter says: "His industry and genius have left permanent impressions in every field of mathematics; and though his contributions to the Theory of Prob. relate to subjects of comparatively small importance, yet they will be found not unworthy of his own great powers and fame."

In 1797 there was pub. in Lond.: *Elements of Algebra, by Leonard Euler. Trans. from the French, with the Critical and Historical Notes of M. Bernouilli. To which are added, the Add. of M. de la Grange; some Original Notes by the Translator; Memoirs of the Life of Euler, with an Estimate of his Character; and a Praxis to the whole work, consisting of above 200 Examples.* 2 vols.

EURASIANS.—Indo-European Christians of Colour. In 1864 Mr. P. M. Tait read before the Statistical So. a paper: *On the Mort. of Eurasians.* [INDIA.]

EUROPE.—A principal division of the world, forming the north-west portion of the Old World. Though called a continent, it might more justly be called a great peninsula, which is again characteristically divided into several smaller peninsulas. It is the least of the principal divisions of the Earth, Australia excepted; and yields to the others, not only in general grandeur of scale, but also in appreciable gifts, noble rivers, luxuriant variety of vegetation, and mineral treasures. Yet it is remarkable for its decided superiority in arms and industry; and as the quarter wherein civilization, almost constantly progressive, has hitherto attained its most perfect development. The sovereignty of European nations now extends into every quarter of the earth. The origin of this striking superiority will be found, on examination, to be attributable more or less to certain physico-geographical conditions, such as climate, productions, maritime convenience, etc.: more happily combined in Europe than elsewhere, and which, though they may escape attention, yet exercise a profound and inevitable influence on the early growth of human society. The natural characteristics, therefore, of Europe, taken as a whole, with the peculiar advantages or disadvantages of its several portions, well deserve to be carefully considered.

Regarding the *position*, *area*, etc., the following useful details may be furnished. The most northern point of Europe, on the mainland, is Cape Nordkyn in Lapland, in lat. 70° 6′; North Cape, on the island of Mageroe, lies about 4 m. further north. The most south points of the Continent are Punta de Tarifa, lat. 36°, in the Strait of Gibraltar; and Cape Matapan, lat. 36° 17′, which terminates the Morea. The Island of Candia reaches a little south of 35°. On the west, Cape Finisterre (coast of Spain) is in long. 9° 27′ west; Cape Roca (Portugal) in long. 9° 28′ west; while Ekaterinburg, in the Uralian Mountains, lies in long. 60° 36′ east. Thus Europe may be said to extend, in round numbers, through 35 degrees of latitude and 70 of longitude. From Cape Matapan to North Cape is a direct distance of 2400 m.; and from Cape St. Vincent to Ekaterinburg N.E. by E. 3400 m. But the area of the Continent must not be deduced from these large numbers, which are indeed on the extreme dimensions of a very irregular and much broken figure. Europe will be seen at the first glance to be made up of the following parts, each, in some measure, naturally independent of the rest, namely, the Scandinavian peninsula, Jutland, and the Danish Islands; the Brit. Isles, the Iberian peninsula, or Spain and Portugal, the peninsula of Italy, and that of Greece. Iceland also, though not physically connected with Europe, has always been reckoned as part of it, because it was known to Europeans, and colonized by them, long before the discovery of America, to which it more properly belongs. Owing to this incompleteness of figure and separation into peninsulas, the area of the European continent, notwithstanding its considerable length and breadth, does not exceed 3,600,000 sq. m., or 3,800,000 if Caucasus be taken as the S.E. limit towards Asia. Towards the east it grows more compact, or, in other words, it loses in Russia its characteristic peninsular features, and takes a transitional form before it commingles with Asia. But west of Cracow and the Russian territory, there is hardly a spot in the European continent which is 300 m. distant from the sea.

Regarding *climate*, Europe enjoys the advantage of lying almost wholly within the temperate zone. A small portion of it indeed, comprising Lapland and the north coast of Russia, does extend beyond the Arctic circle; but it nowhere reaches to the line of perpetual congelation. On the other hand, the most south point of Europe does not reach within 12° of the Tropic, nor ever attains a zone where snow is a rare phenomenon. Another advantage is the great extent of its maritime boundaries, the European continent being, as already stated, a great peninsula again divided into several peninsulas. This frequent mixture of sea and land tends to diffuse over the latter the equable temperature of the ocean. It is also the means of conveying to the land an immense quantity of vapour, which, falling in rain, furnishes to the atmosphere an accession of heat. It is well known that west coasts are in general more warm and humid than those that face the east. Now this difference of climate is due wholly to the difference between the ruling winds. The west or rather south-west wind in our latitudes is in reality the equatorial current of the atmosphere, which, flowing first due north, towards the pole, continually inclines more and more towards the east, because the velocity of the earth's movement of rotation is greatest at the equator, and diminishes towards the poles: and consequently that motion from west to east, which is latent in the equatorial current at its first starting north, becomes apparent as the circles of latitude become less; and the wind from the inter-tropical regions describing a curve, arrives upon our shores as a south-west wind. A like train of reasoning, with an obvious inversion of circumstances, will show that the north-east wind is generally nothing else than the polar current, bent from its orig. south course, because it falls short of the east motion of the lower circles.

Now the equatorial current of the atmosphere, determined in its course by circumstances, the explanation of which belongs to physical geography, flows N. with little intermission, over the Atlantic Ocean, and inclining E. becomes a S.W. wind. This is the predominating wind of western Europe. In Ireland the S.W. wind, warm and humid, prevails during nine months of the year; on the Continent its duration, strength, and temperature decline uniformly towards the E. At St. Petersburg it is still the prevalent wind, but further E. it gives way to the cold and dry N.E. wind, which thenceforth has the upper hand, and exercises a powerful influence on the climate. From this it will be evident that the heat and moisture of the equatorial zone are continually flowing into the atmosphere of Europe. But this effect is greatly heightened by an oceanic current. The equatorial current of the ocean runs west; but being checked by the American continent, it turns north, flows round the Gulf of Mexico, and then, under the name of the Gulf Stream, runs at a little distance from the coasts of the U.S., and, passing south of Newfoundland, falls with a relatively high temperature chiefly on the shores of Ireland, Scotland, and Norway. At the same time, the northern shores of Europe are guarded from accumulation of ice by fortunate accidents of structure. Thus it appears that many circumstances concur to favour Europe generally with a peculiarly genial climate, in which the vicissitudes of season are felt without their rigour, and the luxuriance of nature is so far subdued as never to overpower the efforts of industry.

The preceding interesting outline of the physical geography of Europe is condensed from the *Imperial Gazetteer*, wherein will be found much valuable information on other points of interest. Many facts connected with the climate of Europe will be found under CLIMATE.

Ancient geographers appear to have regarded this, the smallest division of the Old World, as an appendage to Asia.

The following T. furnishes a number of useful details regarding the area, pop., etc., of the principal Countries and States of Europe. It is corrected from Martin's *Statesman's Year Book* down to the commencement of 1874.

State.	Area.	Population.	Date of Census.	Pop. p. sqr. mile.
Austria—Hungary......	226,406	35,904,435	1869	158
Belgium	11,267	5,087,105	1870	451
Denmark	14,553	1,784,741	1870	111
France	201,900	36,102,821	1872	150
Germany	212,091	41,009,999	1871	193
Gt. Brit. and Ireland...	119,924	31,817,108	1871	265
Greece	19,941	1,457,894	1871	73
Italy.................	112,677	26,796,253	1871	237
Netherlands	20,527	3,674,402	1872	179
Portugal	36,510	3,995,152	1868	108
Roumania	45,642	4,605,510	1867	—
Russia (in Europe)	2,041,809	63,658,934	1867	—
Servia	12,600	1,098,281	1861	—
Spain	182,758	16,301,850	1860	90
Sweden & Norway......	288,771	6,013,412	1872	21
Switzerland...............	15,223	2,669,147	1870	175
Turkey........	207,438	15,500,000	1844	75

The 6th Rep. of Reg.-Gen., pub. 1845, contained a variety of important information regarding the V. Sta. of the chief European countries.

Dr. Southwood Smith said, 1847, "There is reason to believe that the mort. at present throughout Europe, taking all countries together, including towns and villages, and combining all classes into one aggregate, is 1 in 36."

Returns issued for 1865 by the Reg.-Gen. of Eng. showed that the estimated pop. of the U.K. in the middle of the year 1865 was 29,768,089; of France, 37,980,924; of the Austrian Empire, 34,676,081; of Italy, 22,483,663; of Spain, 16,378,958. The birth-rate of the year was 3·543 p.c. in the U.K., 2·650 in France, 3·912 in Austria, 3·849 in Italy, 3·754 in Spain. The death-rate was 2·307 p.c. in the U.K., 2·422 in France, 3·099 in Austria, 2·993 in Italy, 3·288 in Spain. The U.K. was the healthiest, and the excess of the birth-rate over the death was greatest there. The marriage-rate (persons married) was 1·680 p.c. in the U K., 1·576 in France, 1·600 in Austria, 1·830 in Italy.

The following is a résumé of the health statistics of some of the principal countries of Europe, condensed from Dr. Farr's Address on Public Health delivered before the Social Science Congress at Manchester in 1866.

Take the pop. with the lowest state of health first, beginning with *Russia*. That Empire is emerging from barbarism, and its condition enables us to conceive the state of the pop. of Europe in the Dark Ages. The mean lifetime is only 25 years. The marriage-rate is 10 (p. 1000); the birth-rate, 45; the death-rate, 36. In the new kingdom of *Italy* the death-rate is 30; and there is this peculiarity, that the pop. of the country is as unhealthy as that of the towns. In *Spain* the death-rate is now (1866) 28. In *Austria* it is 30. In *Prussia* 29. Throughout *Germany* the people do not live, on an average, 30 years. In *Sweden* and *Denmark* the mort. is 22 p. 1000. In *Norway* the death-rate is only 17. In *Hanover* 23. In *Holland* 26. In *Belgium* 22. In *France*, until lately, 23, now 22, the same as in England. About *Greece* little can be said; and as to *Turkey*, *Syria*, *Egypt*, and *North Africa*, all that can be said about these five regions of the world is that they are desolated by diseases, are unhealthier than Russia or Italy, and are nurseries of the plague that subjects Europe to the vexatious oppression of quarantine. The healthiest region of Europe is that of which *England* is the centre, where the people live on an average 35, 40, or 50 years.

No variation in the health of the States of Europe is the result of chance; it is the direct result of the physical and political conditions in which nations live. This is so well understood that the people in every country are associated in these inquiries, and are watching the progress of the great question of public health in Eng. Yet its vital importance is nowhere fully recognized; its influence in the hist. of mankind is lost sight of in the din of war, and in the terrors of revolution. With what just eloquence have Burke and the historians of all nations denounced the furious executions of Paris. But in *Germany*, including districts under paternal well-intentioned sovereigns, some 300,000 men, women and children are killed every year by diseases in excess of the numbers dying of the same diseases in *France*. Under the indolent princes of *Italy* the annual life-loss in excess exceeds 150,000 lives. Not to save in some circumstances is to destroy. Can we wonder then at the feverish uneasiness of those great populations whose instincts have led them at last to coalesce in powerful States!

A Return presented to Parl. by the Board of Trade in 1868, containing statistics of foreign countries, gave the following calculations based upon returns for the years specified:—The pop. of *Belgium* (in the year 1865) averaged no less than 442 to the square mile; of *Saxony* (in 1864), 411 to the square mile; *Holland* (1865), 277; the U.K. (1866), 266; *Wurtemberg* (1864), 235; *Italy* (1865), 230; *France* (1864), 183; *Prussia*, old provinces (1864), 179; *Bavaria* (1864), 162; *Switzerland* (1860), 157; *Austria* (1864), 157; *Portugal* (1863), 120; *Denmark* Proper (1863), 114; *Spain* and *Balearic* Islands (1864), 84; *Greece* (1861), 58; *Russia* (1862) in *Europe* 31, the *Empire* 9; *Sweden* (1865), 24; *Turkey* (1844), 20; *Norway* (1865), 14; *Chili* (1862), 12; U.S. (1860), 11; *Peru* (1859), 5; *Brazil* (1864), 3¼. Ranking nations in the order of the number of births of children born alive in a year, *Wurtemberg* (in 1864) had 1 birth to 23 persons living, and 1 death to 31 persons living; *Prussia*, old provinces (1864), 1 birth to 24, 1 death to 38; *Chili* (1862), 1 birth to 24, 1 death to 41; *Austria*, exclusive of *Hungary* (1864), 1 birth to 25, 1 death to 31; *Spain* (1864), 1 birth to 26, 1 death to 32; *Italy* (1865), 1 birth to 26, 1 death to 33; *England* (1865), 1 birth to 28, *U.K.* 1 death to 46; *Sweden* (1864), 1 birth to 30, 1 death to 50; *Bavaria* (1861), 1 birth to 30, 1 death to 35; *Holland* (1864), 1 birth to 30, 1 death to 42; *Denmark* Proper (1862), 1 birth to 31, 1 death to 51; *Belgium* (1865), 1 birth to 32, 1 death to 41; *Greece* (1860), 1 birth to 35, 1 death to 49; *France* (1864), 1 birth to 38, 1 death to 44. In *England* the average ann. ratio of the last 30 years is 1 birth to 30 persons living, or 3·3 p. 100 persons living, and 1 death to 45, or 2·2 p. 100 living—3 births to 2 deaths;—but the birth-rate of recent years has been 3·5 p.c.

An article in the *Wanderer*, of Vienna, August, 1869, gave the following details:—In every 10,000 inhabitants, 353 deaths occur in *Austria* and *Hungary*, 258 in *France*, 290 in *Prussia*, 259 in *Holland*, 220 in *Gt. Brit.* and *Ireland*, 222 in *Belgium*, and 361 in *Spain*. Truly, it is a sad pre-eminence to stand next to Spain in the ratio of mort. But what is our position with respect to elementary education? For every 10,000 inhabitants the number of scholars at the elementary schools is, in *Austria* and *Hungary*, 830; in *France*, 1160; in *Prussia*, 1520; in *Holland*, 1208; in *Gt. Brit.* and *Ireland*, 1100; in *Belgium*, 1140; in *Spain*, 700. Hence we find the two countries where the rate of mort. is highest are by a striking analogy those in which the proportion of scholars is lowest. But a sceptic may say, perhaps the high rate of mort. arises from immoderate production, and is caused in fact by too large a number of births. Hübner shows that for every 10,000 inhabitants there are 403 births in *Austria* and *Hungary*, 269 in *France*, 404 in *Prussia*, 351 in *Holland*, 349 in *Gt. Brit.* and *Ireland*, 300 in *Belgium*, and 400 in *Spain*. If we consider the increase of the pop. by the excess of births over deaths, we find that it averages (for every 10,000 inhabitants) 50 in *Austria* and *Hungary*, 31 in *France*, 114 in *Prussia*, 92 in *Holland*, 129 in *Gt. Brit.* and *Ireland*, 78 in *Belgium*, and 39 in *Spain*. From this we see that France alone among the countries with largely visited schools stands below *Austria* in the rate of increase, but that all the others which surpass her on the one point do so on the other also. We, with our sparse pop., and our rich natural resources, have therefore, as we have shown, for every 10,000 inhabitants an increase of 64 less than *Prussia*, 79 less than *England*, 42 less than *Holland*, and 28 less than *Belgium*. This is an important loss both in material and intellectual respects; a physical deficit, which arises from our spending too much—that is, from our high rate of mort.

As it forms part of our plan to review the V. Sta. of each of the principal European countries under its own head, in alphabetical order, we do not enlarge upon these details here. The foregoing are merely given as stand-points for reference.

The pop. of Europe in 1872 was estimated at 301,700,000. [Isothermal Zones.]

EUROPEAN Alliance Full-pay Mutual Ins. Co.—Founded in 1852, "for Government Officers of all nations, civil and military." Proposed cap. £100,000. The object of the Co. was stated to be: "For assuring on the mut. principle to officers (military and naval), and the public functionaries of the Governments of Europe, their full-pay allowance to the time of death, commencing from the date of their entering on their retiring pensions."

The Co. was regis. on the 21 Sept. 1852, by George Octavius Etherwill, gentleman, and William A. Arnati, gentleman; the former became the Managing Director, the latter the Sec.

In add. to the full-pay there was to be a quinquennial division, to be appropriated "in the shape of dowry and indemnity against all the orphans of less than 15 years of age," and a "loan fund" besides; also a "European Provident Fund," and a "Mutual European Provident Fund."

The project was advertised in most of the principal Continental newspapers, and money began to come in. One gentleman, connected with the *Rock*, had £500 sent to him to invest; and another, connected with the *Victoria*, received £80 for the same purpose. They each made inquiries at the office of the *Post Mag.*, and the publisher of that periodical made inquiries at the office of the Co., 457, Oxford Street, with the following result (vide *Post Mag.*, 16 Oct. 1852):—

> Our first step was to direct one of our detectives to take a survey of the establishment; and the account he gave of it was that the Co.'s offices consisted of a room over a bonnet-maker's shop in Oxford Street,—that he made inquiries of one of the pretty sempstresses on the ground floor, who could give no other account of the lodgers than that they had been there but a short time, and had received a great number of letters; but she believed they were something in the Insurance line,—that he then rang the bell at the side door, which was opened by a dirty-looking little man, having the cut of a German Jew,—that the said dirty-looking man had a great objection to permit the inquirer for a prospectus to go upstairs, as the Secretary was not in,—that the inquirer, however, did go upstairs, and found the office furnished with two or three chairs covered with bed-furniture, and a table, whose fourth leg, having suffered dislocation, was held together by a piece of cord,—that the Sec. at last came in, not exactly covered with bed-furniture like the chairs, but dressed after the fashion of a travelling tragedian whose last benefit had been a failure,—that after certain inquiries, the said Sec. began to smell a rat, and would give no further information, but threatened to send for a police-constable to take the inquirer into custody for doubting the respectability of the Co.,—and that in proof of that respectability the said Sec. referred to the records of the Registrar's office.

The managers shortly afterwards shut up shop, and the concern died out.

EUROPEAN-American Life Ins. Co.—This project was set on foot in N.Y. at the close of 1867, or early in 1868, by Mr. Rob. Crawford, of "European" fame. It was to have a capital of 2,500,000 dols., of which 250,000 be paid up, carrying 7 p.c. int. It was announced that the project would "tend to unite two great nations, in spite of an intervening ocean, by the ties of mutual and practical interest in the cause of intellectual and moral advancement." Also that "it is conceived, and will be organized and equipped on a grand scale, and officered by men who rank high among the active philanthropists of the age. Robert Crawford, Esq., of Westbrook, near Edinburgh, Scotland, is its principal promoter." "At the public dinner given to him in Lond. on the occasion of his departure to this country [the U.S.], the most distinguished members of the aristocracy, gentry, army, navy, press, and law, gathered about him, and paid the most cordial and eloquent tribute to his personal worth and well-earned celebrity." "A large part of the cap. has, we are informed, been already subs.; many applications are daily made for shares at the Co.'s temporary office, No. 65, Wall Street; and as its bus. will be commenced when 100,000 dols. are paid up, we shall soon witness the inauguration of this remarkable Life Ins. enterprise." Finally, "This Co. will be in no respect connected with the *European* Asso. of Lond.; but the American risks of the latter Co. will prob. be assumed by the new organization." The preceding "buncome" did not raise the £20,000 required to make a start, and the project fell through.

EUROPEAN Life in India.—The value, *i.e.* mort. experience of European Life in India will be fully discussed under India.

EUROPEAN Life and Annu. Co. [called for sake of distinction in these pages *European* No. 1].—Founded in 1819, with a cap. of £1,000,000, in 50,000 shares of £20, to be fully paid up. The objects of the Co. were stated to be "the ins. of lives, the sale and purchase of annu., the effecting endowments for children, and the receiving investments of money for accumulation." The name orig. adopted was "The European Co." This was under a D. of Sett. dated 10 Feb. 1819. A new D. of Sett. was afterwards adopted.

The scheme of the undertaking was special in many respects. Its million of cap. was to be paid up, in view of being largely invested in the *purchase* of life annu. It made also a great feature of receiving money for investment, and accumulation. These causes combined prob. led to the ultimate downfall of the Co.

We shall quote its proposed scheme of bus. from an official pamph. pub. by way of prosp.:

> The greater part of the wealth of these kingdoms, consisting of entailed estates (the possessors of which are legally viewed as life tenants only); of copyhold and ecclesiastical estates, determinable on lives; of those held by dower, on improved leases, etc.; of income derived from pensions; or dividends in the Funds, where the cap. is locked up; in short, of such various descriptions of income coming under the denomination of mere life annu. to the possessor;—some estab. where persons so circumstanced might, on equitable terms, be enabled to raise money by way of annu., has long been a desideratum. Persons possessing such property, who may at any time require an excedent [excess] beyond the ann. rents of their estates or income, and having no other security to offer but such rents, or yearly income (the receipt of which depends entirely upon the life of the possessor), are necessarily compelled to obtain accommodation by way of annu., as before stated; and for the want of any regular co. where they could receive a fair price for their property, they are compelled to apply to the common advertisers, who, besides the delay, and exposure of their affairs to agents three or four removes from the actual parties who are to advance the money, make such heavy charges for law, agency bonus, and high rate of annu., that the sum contracted for is frequently so reduced as to be insufficient for the purposes for which it was required.
>
> By the estab. of the *European* Co., not only the above evils, but the general destructive principle of the present annu. system, will be removed; and that which has hitherto proved so ruinous to the prosperity and happiness of the thoughtless, will be turned into one of the most beneficial channels: whereby the careful and prudent may not only be enabled to raise a sum of money to promote the future prospects of themselves or families by the immediate accommodation; but the very contract itself (laying all chance and speculation aside) will insure to their families advantages hitherto unnoticed by any calculator.
>
> Annu. at present are either certain or redeemable at the option of the grantor: if certain, they pay the annu. amounting to 12, 14, 16, or 18 p.c. as long as the life or lives selected shall continue to exist; but if redeemable, it may be paid off at any period by 6 months' notice, or 6 months' advance of the annu., in add. to the payment of the sum orig. borrowed. In either case the terms are hard on the grantor, who, perhaps, through some temporary want of a particular sum, is induced to grant an annu. at the high rate before stated, which he must either continue to pay as long as he lives, or return the sum orig. borrowed, after having paid, perhaps, an excessive annu. for years.
>
> The object of this Co. is to form an estab. where, by nice and accurate calculations on chances and the improvement of money, the collective as well as the individual interest of all concerned may be concentrated: granting to each those advantages which the certainty or contingency of their engagement may be worth. This will be illustrated in the first instance, with respect to those who wish to raise money by the sale of an annu. Suppose a person wanted to raise £100, and the nature of the security obliged him to have recourse to an annu.: this Co. would purchase it at 9 p.c., exclusive of the life ins.; out of which they would appropriate £1 ann. for the benefit of the seller, which might be applied according as they wished, either in the progressive ann. reduction of the annu. (with liberty to repurchase it at any period, at the reduced value), forming a fund for its more speedy redemption, or permitting it to accumulate for the benefit of their families. For instance: Suppose a person aged 30 sold an annu. for £100, in 10 years he could repurchase it at £76; in 15 years, at £61; in 20 years, at £41; in 25 years, at £19; and in 30 years the annu. would not only be entirely paid off, but the grantor would be entitled to receive £9. Should they, however, choose to continue the payment of the annu. during their lives, at their decease they would be entitled to bequeath to any one they might think proper (according to the time the annu. had been granted) the following sums for each annu. of £9 sold. For instance, suppose the annu. to have been paid 10 years, £12 could be withdrawn; 15 years, £21; 20 years, £33; 25 years, £47; 30 years, £66; 35 years, £90; 40 years, £120; 45 years, £159; 50 years, £209; 55 years, £272; and 60 years, £353—in add. to each £100 orig. received of the Co. for the annu. granted.

By the above method—ingeniously contrived to defeat the Usury Laws—it was contended a new era in annu. would be commenced. "Hitherto they have only been considered as a source of dissipation, and pregnant with every evil attendant on embarrassment. All these objections are at once removed by the present system, and a wide field is opened, where persons desirous of entering into any branch of bus. may expeditiously, safely, and advantageously, be enabled to command a sum of money for that purpose, with the gratifying certainty (it was added), whether the immediate speculation terminated successfully or not, time, as it rolled on, would be forming a fund which would enable them either to liquidate the annu. altogether, or, in case of their death, estab. a provision for their families." Other examples follow, and it is set forth:

> Great, however, as the benefits are proved to be to those wishing to raise money for any useful purpose, all the other branches connected with the Co. will be equally interested in the cap. being thus employed; which will not only be beneficial in the annu. it secures, but in the life bus. it will bring the So., which, only reckoning on the amount of the shareholders' cap. placed out on annu. (as before stated), will amount to 1 million stg. But when the prems. taken by this Co. for life ins. are compared with those of other offices, the advantages will prove so considerable as to leave no doubt of the enlightened public patronizing their efforts.

We next reach the "Endow. for Children," which embodied no special feature, except in so far as it was made to lead up to the deposit of sums to accumulate, which was regarded as another and a preferable system. The pamph. proceeds:

> To effect this desirable object, the present Co. undertakes to receive investments of small or large sums for accumulation. These may either be paid weekly, monthly, or yearly, and withdrawn at any time by 6 months' notice; but if suffered to lie 6 years, could be recalled with an increase of 34 p.c., being at the rate of 5 p.c. compound int. for the time it had been deposited; but if it continued under the man. of the Co. after that period, the investor would not only be entitled to compound int. at 5 p.c., *but a share of the profits of the concern, not exceeding 7 p.c. compound int., on the money invested.*

T. are given showing the effect of this—the profits being estimated for the purpose: thus £100 invested for 20 years would yield in int. £165, in profits £96, making, with itself, £361 to be received at the end of the period.

It was part of the bus. of the Co. to sell, as well as to buy annu., and they allowed a rate much higher than any other sound asso. then extant, viz. at age 35, £8 10*s.* : age 40, £9 ; 50, £10 12*s.* ; 60, £12 17*s.* ; 70, £17 3*s.*

The life prems. were much lower than those then in use by, we believe, any other office. They were announced as being 30 p.c. lower. They were in fact deduced from the *Swedish* Mort. T., with an add. of 10 p.c., "to form a reserve bank to meet any unexpected call, which a time of general malady might occasion." The pol.-holders were promised a "liberal add. to their pol. in 10 years." Endowments were admitted to parti. in profits ; but from what source the profits in either case were to be obtained is not stated.

The Co. indeed proceeded a good deal on the plan of giving everything to everybody. The proprietors were to receive half yearly a div. at the rate of 5 p.c. p.a.

> And the suplus profit arising from the employment of the cap. in annu., after deducting the proportionate share in the charges of management, will be add. at the end of each year to the stock of each proprietor, on which an add. int. of 5 p.c. will afterwards be paid. They will likewise be entitled to all the profits attached to the departments of life ins., endow., annu., investments, etc., which will be ascertained by the man. every 3 years, and also added to the stock of each proprietor, according to their several amounts, on which a further int. of 5 p.c. will afterwards be paid, the same as on the money actually advanced. This mode, at the same time as it affords the stock-holder the earliest advantages on the profits of the concern, secures the estab. from the possible danger that an actual division of its gains might be supposed to occasion. The stock thus belonging to the proprietors, they will be at liberty to dispose of with all accumulation, the same as any other part of their personal property; and the man. of the concern will be under the personal inspection and control twice in every year, or oftener if it should appear to them requisite.

We next reach an outline of the proposed management of the Co. Under this head we find the following:

> Where a considerable sum of money is to be received, too great caution cannot be used to prevent the possibility of its misapplication. To guarantee this, no man, however high he may stand in the estimation of society for integrity, should have uncontrolled power over the funds. A long list of names as trustees and directors may appear very imposing on paper, but every man of bus. is convinced they are of little real utility; the selection, therefore, of 9 directors, who are men of bus., and will actually attend once a week in sufficient numbers to form a board, is considered preferable to a nominal list of 24 names, which rather impedes than accelerates bus. . . .

Regarding the Manager, there is the following:

> The Man. shall be a person whose knowledge of the system of Life Ins. and Annu. Calculations, etc., shall qualify him for the situation. He shall reside in the house, and give daily attendance where the bus. of the Co. is carried on; make all calculations, and state the ann. and triennial amount of profit which the various branches of ins., annu., endow., investments, etc., will allow to be added to the stock of the shareholders; and do all such bus., aided and assisted by the Sec., as the interest of the So. and orders of the directors may from time to time require; and as Mr. John Clark, by his calculations, exertions, and interest, has been the promoter and cause of the estab. of the present Co., as a reward for the expense and trouble he has been at in the formation thereof, and that the interest of the So. in its infant state may not be injured by the appointment of persons to the man. who are ignorant of the plan, it is agreed that the said John Clark shall be appointed Man. during his natural life.

There is a note which says this last was done "in the instances of the *Amicable*, *Globe*, &c."

The remainder of the pamph. is occupied with estimates of the profits expected to be realized upon three principal branches of the Co.'s bus. ; a perusal of which should have induced any man of business to refuse the proffered advantages.

In 1818, or the year before the Co. was got into working order, there was pub. by Mr. John Clark*: Obs. on the Nature of Annu., Life Ins., Endow. for Children, and Investments of Money for Accumulation; with a General Outline of the Plan, Laws, and Regulations of the European Life Ins and Annu. Co. To which is annexed a slight Sketch of the Difference between Income derived from Annu. and that obtained in Perpetuity from Legal Interest.* It is from this pamph. that we have quoted much of the preceding. In the preface is the following :

> No estab. has ever yet been formed embracing such solid and extensive advantages; for great as they appear, the positive engagements of the Co. are all drawn from an int. of 5 p.c. only; the security of the estab., therefore, could not be affected, even supposing 8 p.c., by way of annu. could not be obtained; but when the advantage resulting to the public from the new annu. system (formed by this Co.) is compared with that hitherto practised even by honourable men, the conviction will be, that instead of 1 million stg., if ten were to be disposed of, the Co. would find ample scope for its employment. With this gratifying view of the concern, even under its worst aspect, no fairer prospect of success could be shown in any undertaking of equal magnitude.

It was intimated that "as soon as a sufficient cap. is formed, application will be made to Parl. that the So. may act under its sanction."

The second D. of Sett. was dated 10 July, 1820. There is nothing in it calling for any special mention now. There was a Supplementary D., dated 1 Feb. 1821.

In 1844 the Co. obtained a special Act of Parl.—7 & 8 Vict. c. xlviii.—*An Act for regulating legal proceedings by or against the European Life Ins. and Annu. Co., and for granting certain powers thereto.* There is nothing herein requiring special note.

The bus. of the Co. was never large. It was understood in the later years of the Co.'s existence that considerable losses had been incurred by investing upon houses in course of construction. The shares became depreciated in value.

Upon this state of things poposals for amalg. took place. The shareholders were only offered £8 for each £20 paid up. Finally, in 1858, the Co. was amalg. with the *People's Provident* (founded 1853).

The agreement for amalg. embodied (*inter alia*) the following conditions :

1. That the goodwill, property, and assets, and also the debts and liabilities of the Co., shall, as from the 31st day of Dec. 1857, be trans. to, and accepted by, the said *People's Prov*. So.

2. That the *European* Co., and all past and present proprietors thereof, and their respective representatives and estates, shall be indemnified by the said *People's Prov*. So. from the said debts and liabilities, and that a proper covenant for that purpose shall be entered into by the said So. . . .

4. That each of the proprietors and other shareholders of the *European* Co. shall, for each of his or her shares in the cap. of the Co., be entitled to 5 fully paid-up shares of £2 10*s*. each in the cap. of the said *People's Prov*. So., in lieu and in full satisfaction for his or her shares in the cap. of the Co., but with the option (if declared in writing and sent to the office of the said So. within two calendar months from the date of the deed or deeds by which the said trans. shall be effected) of receiving for each of his or her shares in the cap. of this Co. the sum of £8 in cash, to be forthwith paid to him or her out of the funds of the said So.

These arrangements were approved of at meetings of each Co., and the amalg. was completed by deed, dated 8 Dec. 1858 ; and this Co. then ceased to carry on bus.

In 1859 the *People's Provident* took the name of the *European*, and became what we term in these pages *European* No. 2. By the failure of the last-named Co., the No. 1 Co. has had to be formally wound up. [EUROPEAN NO. 2 LIQUIDATION.]

The first Man. Director was Mr. John Clark ; he was succeeded by Mr. David Foggo as Act. and Sec. ; finally, about 1850, Mr. Wm. Barton Ford became Sec.

It may be useful to add a few notes upon one or two of the decisions which have arisen in the winding-up of this Co. under arbitration.

In *Gardiner's case*, 1873, the following points arose : 1. After the amalg. of the Co. with the Co. which became *European* No. 2, an Act of Parl. was obtained by the last-named Co., which declared that *European* No. 2 should be liable on pol. whether issued by No. 1 or No. 2. It was thereupon contended that the Act created a substitution of liability, and that a pol.-holder could not fall back upon this (No. 1) Co. It was *held*, that this was not the meaning of the Act, and that the liability of this Co. still remained. 2. The name of this (No. 1) Co. was misprinted in the Arbitration Act. It was contended that this excluded the Co. from the operation of the Act. It was *held*, that this, which was clearly a mistake, could not override the obvious intention of the Act. 3. The pol. in question had been issued to Major Gardiner for the purpose of securing an annu. of £300 to his widow for her life. The widow now brought in her claim in respect of this annu. ; but it was objected on the part of the directors now representing the Co., that the covenant having been with Major G., his personal representative ought to be a party to the application :—*Held*, that this was not necessary. 4. It was objected that the pol. did not refer to the D. of Sett. of the Co. dated 10 July, 1820, but to a deed of some prior date, about which nothing was known, and which might be the deed of some other Co.:—*Held*, that this objection did not affect the claim on the pol., the directors not being able to explain what was the deed that was referred to. 5. Finally an order was made to wind up this Co. as subsidiary to *European* No. 2.

In *Doman's case* (No. 1), and *Sullivan's case*, 1873, the facts may be shortly stated as follows. On the trans. of the bus. of this Co. in 1858, some of the shareholders received £8 p. share, and the rest (excepting 5) received shares in the *People's Provident*, in respect of their shares in this Co. In consideration thereof, they trans. their shares to the Gen. Man. of the *People's Prov*. No memorial of these trans. was ever enrolled in Chancery, nor were they regis. in the books of the Co. The transferring shareholders whose names remained in the last enrolment, and in the books of this Co., as holders of shares, were in the winding up placed on the list of contributories. On their application to have their names removed, it was *held*, that each of them was entitled to say that the agreement between this Co. and the *People's Prov*. ought, so far as he was concerned, to be treated as an agreement fulfilled in substance, requiring only a certain solemnity to be performed, and the duty of supplying that solemnity was an engagement contracted for by the *People's Prov*., and if the trans. by him was incomplete in respect of that formality, it was a want by which nobody claiming under the *People's Prov*., or coming in by virtue of its position, could assert any right as against him. Accordingly, it was declared that the transferring shareholders had a right, as against the *People's Prov*. [*European* No. 2], to have full legal effect given to the trans. of their shares, by every solemnity, and to receive and retain the money paid to him for the same, and that he ought to be considered as discharged from the status of shareholder in this Co. ; *but this declaration was without prejudice to any question as to the liability which shareholders might be under by virtue of their names remaining on the memorial of shareholders of this Co., to persons being creditors of this Co., and not having notice of or coming under the contract between this and the People's Prov. Co.* Without prejudice to this question, the names were removed from the list of contributories.

In *Doman's case* (No. 2), 1874, some of the questions involved in the last case came up in another form. 1. The pol. of the Co. witnessed that "the funds and property of the Co. shall be subject and liable (according to the provisions of the Co.'s D. of Sett.) to pay and satisfy" the sums insured :—*Held*, that the pol. includes all the words of the Deed. 2. On the amalg. it was arranged that the shareholders should trans. their shares to the Man. of the transferee Co. [as seen in the last case], but a memorial of the trans. was not enrolled in Chancery in accordance with this Co.'s Act of Parl., which provided that those whose names should appear in the last enrolled memorial should be liable to all legal proceedings under the Act, as existing shareholders of the Co.; and the pol. were of the above form; on the winding-up of both the Cos., the transferee Co. being unable to indemnify in full the creditors of the transferor Co.:—*Held*, that a shareholder was not liable to contribute to the payment of creditors of the transferor Co. in respect of pol.; although he might be liable to creditors in respect of the general debts.

In *Sullivan's case* No. 2, and *Thomson's case* No. 2, the circumstances only differed from *Doman's* No. 2 in the fact that instead of £8 p. share having been received in exchange for each Co.'s share, 5 fully paid-up shares in the *People's Prov.* had been accepted. It was admitted that these cases were covered by the judgment in *Doman's case* No. 2, and accordingly a similar order was made. It was also thought unnecessary to argue *Rivington's case* No. 2.

EUROPEAN ASSURANCE SO. [sometimes herein called *European* No. 2].—This Asso., whose later hist. has now become so prominent, has an earlier hist. not very generally known. It commenced its operations in 1853 as the "*People's* Assu. So. for Lives, Annu., Endow., etc.," with a proposed cap. of £100,000. Its adv. said: "The People's Assu. So. is estab. in connexion with the Equitable Provident Inst. ["a National Benefit So."], and together they offer the most sound and complete system of life and health assu. that modern science and experience have hitherto been able to produce. While the 'Equitable Inst.' provides medical aid and a weekly allowance in time of sickness, the 'People's So.' transacts every description of life assu. bus."

The asso. had offices in Lond., Leeds, Manchester, and Glasgow. Its President was the Rt. Hon. T. Milner Gibson, M.P. for Manchester; its Vice-Presidents, James Heywood, Esq., F.R.S., M.P. for North Lancashire, and Thomas Bazley, Esq., Chairman of the Manchester Chamber of Commerce. Its Directors were respectable men; its Act. was Mr. F. G. P. Neison; its Sec. Mr. W. Avens. It was in this phase simply an Industrial Ins. Asso.; and it seems very doubtful whether it had any proper legal constitution whatever.

1854.—Thus early in its career this young Co. entered into an amalg. arrangement with the *United Life and Guar. Assu. Co.*, which had been founded in 1849. The combined Asso. now assumed the name of the *People's Provident;* became regis. under 7 & 8 Vict. c. 110; fixed its capital at £200,000, in 80,000 shares of £2 10*s.* each; and made Fidelity Guarantee an important part of its bus. The President and Vice-Presidents remained the same; Mr. Brown Westhead, of Manchester, and two other gentlemen became Trustees. Mr. James Knight became Sec., and Mr. W. Avens Assistant Sec.

The D. of Sett. of the *People's Provident* was dated 2nd Sept. 1854; and the objects for which the Asso. was estab. comprised Life Ins., Endow., Annu., Fire Ins., the Guar. of Fidelity, "and the absence of negligence, defaults, and irregularities in the conduct of persons" holding or about to enter into situations of trust; and "generally the transacting of every description of bus. ordinarily transacted or capable of being transacted by an Assu. or Guar. Co. or So., or appertaining or incidental thereto; and the uniting and combining together of these several objects," etc. The industrial ins. feature was not specifically mentioned.

1855.—The Co. took over the bus. of the *Industrial and Gen.*, which had been founded in 1849. The cap. of the Co. was now (12 Nov. 1855) increased to £500,000, in 200,000 shares of £2 10*s.*; and the then revenue of the Co. was advertised as exceeding £50,000 p.a. Geo. Fred. Muntz, Esq., M.P. for Birmingham, became one of the Presidents, and Mr. Richard Spooner, M.P., Birmingham, one of the V. Presidents. The Board of Directors was largely increased. Mr. Wm. Cleland became Man. and Sec.

1856.—The Co. took over the bus. of the *Athenæum* Life, which had been founded in 1851.

1857.—The Co. took over the bus of the *Prince of Wales* Co., founded 1851; also the *United Mut. Mining*, founded 1849; and *United Service and Gen.*, founded 1850. It was advertised that the revenue reached £70,000 p.a.

1858.—The Co. took over the bus. of the *European* No. 1, which had been founded in 1819. This event led to important changes.

1859.—During this year the Co. applied for and obtained a Special Act. of Parl.—the 22 Vict. c. xxv.—*An Act for changing the name of "The People's Prov. Assu. So." to the name of "The European Assu. So."; and for authorizing the taking of the guarantee of the So. instead of other security required from persons in public offices and employments; and for other purposes.* The Act recites that the subs. cap. of the So. then amounted to £221,860, whereof £58,152 was paid up; that the assets of the Co., irrespective of its unpaid cap., exceeded £250,000; and that the yearly income was over £110,000; and that it was desired to change the name of the Co. Power was given for change of name, to take effect from 28 days after the passing of the Act. The Co. was to continue to be worked under the provisions of its Deed; and notwithstanding change of name, all pol. were to remain in force, and no right of action to be abated. Then came the following special clauses relating to the "Guarantee Department":

XVIII.—The So. before they issue any such bond or pol. shall set apart out of the assets or income of the So., or out of both, sums of the amount in the whole to £20,000, to form a Reserved Fund; and the So. shall on or before the 1st May of the year next succeeding the formation of such Reserved Fund, and on or before the like day in every succeeding year, set apart out of their assets or income, or out of both, the sum of £2000 by way of add. to the Reserved Fund, until the Reserved Fund amounts to the sum of £100,000.

XIX.—The Reserved Fund shall from time to time be invested in Gov. securities in the name of three or more of the Directors of the So., to be named by the Lords Commissioners of Her Majesty's Treasury; and no part of the Reserved Fund shall be sold out without the consent of those Commissioners.

XX.—The Reserved Fund shall be liable, after the Assu. Fund of the So. is exhausted, but not before, to make good the guarantees or securities of the So., granted in pursuance of this Act, and for no other purpose; and all sums from time to time taken from the Reserved Fund for the purpose of making good any such guarantees or securities shall as soon as possible be replaced from the assets or income of the So., or both, so as to keep the Reserved Fund always up to the amount thereof required by this Act, and any sums from time to time appropriated or carried to the Reserved Fund may be taken either wholly or in part from the Proprietors' Fund and the Assu. Fund of the So., or either of them, as the Directors of the So. shall think fit.

XXI.—Until the Reserved Fund amounts to the sum of £50,000, no proposal shall be undertaken by the So. for the guarantee or security of any person in any public office or employment under the provisions of this Act to an extent exceeding £5000 for any one such person; but when the Reserved Fund amounts to the sum of £50,000, then proposals to an extent not exceeding £10,000 for any one such person may be undertaken by the So.

XXII. If the amount of the Reserved Fund shall at any time be less than the full amount thereof required by this Act, the Commissioners of her Majesty's Treasury, if they think it necessary, may, by notice to the So., suspend the powers of this Act conferred on the So. for undertaking guarantees or securities required to be given by persons in public offices and employments, until the Reserved Fund is increased to the full amount; and from and after the appearance of such notice in the *Gazette*, the So. shall not effect any further guarantee or securities required to be given by persons in public offices or government employments until the Reserved Fund is increased to the full amount.

A list of the shareholders of the So., and a copy of the yearly bal.-sheet, including the amount of the Shareholders' Fund and of the Reserved Fund respectively, and their actual state of investment, verified by the Sec. before a Justice of the Peace, was to be delivered to the Lords of the Treasury on the last Monday in May yearly (s. 23), that the Treasury might appoint an inspector to inspect accounts (at the expense of the So.) if they thought fit.

The remaining clauses of the Act provided that this Act was not to incorp. the Co. so as to free the shareholders from liability (25), and that a return of the change of name was to be made to the Reg. of Joint-Stock Cos.

Various points have arisen out of the Reserved Fund created by this Act; these will be referred to under EUROPEAN ASSU. SO. ARBITRATION.

Several changes followed in regard to the Board. Mr. Milner Gibson remained President; Mr. H. Wickham Wickham, M.P., became Chairman of the Board; and Mr. Cleland remained Man. and Sec.

1860.—The Co took over the bus. of *India and Lond.*, which had been founded in 1846.

1861.—It took over the *Professional* Life (founded in 1846) under special conditions, which will be fully explained in our hist. of that Co. About this date the name of Mr. Milner Gibson disappeared from the prosp.

1862.—It took over the bus. of the *British Guarantee* [Fidelity], which had been founded in 1845.

1863.—28 May, a bonus of 6*d*. per share, on all shares on which 10*s*. or more was paid, was declared, and the amount ordered to be credited to each shareholder in the books of the Co. [1867.]

1864.—The Co. took over the bus. of the *Mercantile Union* Fire, which had been founded in 1863. From this date Fire bus. became, and until 1867 remained, one of the Co.'s features. In the same year the Co. took over the Guarantee bus. of the *Alexandra* No. 1. Boards were now estab. at Birmingham, and in Scot.

1865.—During this year occurred what many have regarded as the turning-point in the hist. of the Co.—viz. it took over the bus. of the *British Nation* Life and Fire Cos.—the former itself compounded of some 22 different asso. Mr. Henry Lake became Sec. of the Co., Mr. Cleland remained Man. It was now adv. that the number of shareholders exceeded 1700; that the cap. subs. exceeded £800,000; and that the existing income exceeded £300,000 p.a. Power had been taken to increase the cap. of the Co. to £1,000,000.

In the following year a Committee of the Board was appointed to inquire into certain circumstances connected with this amalg.

It was after the last-named event that Mr. John Callow, then and for some years chief clerk in the Asso., addressed a Letter to his fellow policy and share-holders, predicting the consequences of the then recent amalg. upon the future destiny of the *European*. The pamph. bore the following title: *A Letter to the Shareholders and Policy-holders of the European Assu. So. on the subject of its recent amalg. with the Brit. Nation Life Asso.*, and was clearly and temperately written.

1866.—The Co. took over the bus. of the *Royal Naval and Military*, founded 1837. The terms were understood to be based upon a Rep. by Mr. A. G. Finlaison, who had been the Con. Act. of the last-named Co. Gen. Sir Frederick Smith, K.H., became Chairman; Mr. Henry Lake became Man.; and Mr. Dalton Easum became Sec. Mr. Cleland retired. His retiring compensation was fixed by arbitration at £15,000, being 2½ years' salary!

The following statement of "new prem. incomes" was now put forward: 1858, £15,000; 1859, £24,000; 1860, £37,000; 1861, £40,000; 1862, £30,000; 1863, £47,000; 1864, £46,000; 1865, £62,000.

1867.—The Fire bus. of the Co. was trans. to the *Etna*. In a prosp. issued about this date it is stated: "This Inst. combines every advantage of the modern system of Life Assu., with perfect security to the assured." "The Royal Naval, Military, and East India Life Depart. is under the especial patronage of Her Most Gracious Majesty the Queen." "The *European* is especially authorized by Parl. to guarantee the fidelity of Gov. officials." "Annu. granted on very liberal terms, the health of the annuitant being taken into consideration."

In April of this year a further bonus of 1*s*. p. share [see 1863] was declared, and credited to the shareholders in the books of the Co. In the winding-up [1872] questions have arisen regarding these bonuses.

1869.—During this year the affairs of the Co. approached a climax; but we must proceed in chronological sequence. The ann. gen. meeting was held in May. The Rep. of the Directors issued on this occasion stated the ann. prem. income from the Life and Guar. branches to have been as follows:—1866, £285,550; 1867, £307,985; 1868, £338,298. The new prems. in those branches amounted in 1868 to £40,676, as against £40,271 in the previous year. This notwithstanding the closing of the U.S. and the Canadian branches. The gross revenue was £363,503. The Life and Guar. claims paid during the year amounted to £257,147, against £238,051 in 1867 [£20,675 of this last sum was for Fire losses]. The claims in 1868 were therefore really £39,861 more than in 1867. The Directors stated that they had no reason to anticipate a continuance of the excessive mort. which the operations of the year had disclosed. The Rep. of the Directors was adopted; new Directors were elected; and thanks were voted to the officers of the Co. in the usual form.

In July a call of 5*s*. per share was made. It produced about £50,000; it ought to have produced £75,000.

On the 13 Aug. an order was made for winding-up the *Albert* Ins. Co. It had long been felt by the initiated that the failure of one of these offices would inevitably bring down the other.

About the middle of Sept. a petition was placed on the file for the winding up of this Co. under the powers of the Court of Chancery. This petition was presented by Mr. Thomas Carlisle Hayward, and Mr. Robt. Crawford, Directors of the Co.; but Mr. Hayward withdrew, and the petition stood as Mr. Crawford's. On the 22 Sept. the petition was heard by V. C. James. An affidavit of the Man., Mr. Lake, stated that not only were the allegations of the petitioner untrue, but that the moneys available were sufficient to pay the liabilities. There were two other petitions on the file; but the hearing was confined to the first. After considerable discussion, an order was made that all the petitions should be heard on 2nd Oct., when the Man. would be required to attend. The Directors to keep all moneys intermediately received in a separate account.

The daily newspapers, immediately after the presentation of the petition, contained the following adv.:

> *European Assu. So.*—The directors of the E. A. So. request the pol.-holders and shareholders not to be alarmed at any of the reports which may appear at the present moment, as they are advisedly and in full assurance of its sound position, determined to oppose to the uttermost the unwarrantable attempts to ruin the So.

The directors issued a circular to the shareholders to the like effect, and which contained the following extracts from the affidavit of the Man.:

> The statement in the said petition that the said So. is altogether insolvent and unable to pay its debts is untrue. The moneys available for payment of current claims are sufficient for the purpose; and the assets and subs. cap. are and will be sufficient to provide for every liability as the same may arise. The said So. does in fact pay its debts, and there is not a single undisputed and due pol. claim remaining unpaid, or which the board is not prepared to pay; and no debt of which payment has been asked of the said So. remains at the present moment unpaid, or which the board is not prepared to pay.
>
> The books of the So. show that the petitioner appears a debtor to the So. for sums amounting to £1200, or thereabouts, including the unpaid call on his shares, and loans unaccounted for, believed to have been received by him as an agent of the So.

Nor was this all. The writer of the City art. of the *Times* daily paper had made announcements regarding the supposed insolvency of the Co. [see 23 and 24 Sept.]; and a motion was made before the Court of Chancery to bring up the publishers for contempt of Court. An apology was however ultimately tendered and accepted. A similar application was made regarding the *Observer* newspaper, but failed on some technical grounds.

On the 2nd Oct. the adjourned hearing took place, and after considerable discussion the V. C. declined to make the order. He considered the evidence in support of the petitions incomplete; and he could not even appoint a provisional liquidator in the then stage of the matter.

On the 13th Oct. the petitions came on for further consideration. The grounds relied upon for obtaining an order were, not that the Co. was "unable to pay its debts," but that under sub-section 5 of the 79 sec. of the Cos. Acts of 1862 and 1867, a Co. might be wound up "whenever the Court is of opinion that it is just and equitable that the Co. should be wound up." On the ground that the bus. had been improperly conducted it was claimed that an order ought to be made. It was stated on affidavit that the entire liability of the Co. under about 40,000 pols. was about £8,000,000, while the entire available assets were but £470,958. The uncalled cap. was stated by the Co. to be £595,000 in add. It was asserted that £261,000 had been spent in connexion with the various amalg. and purchase of businesses. This was treated as an asset in the Co.'s balance-sheet.

Affidavits of various actuaries were put in, in support of the petitions. Mr. A. H. Baily considered the Co. in order to be solvent should have a Reserved Fund of £1,304,000 in actual possession invested at 4 p.c. Mr. R. Tucker put the amount at £1,444,000. Mr. W. P. Pattison at about the same. Similar affidavits from Mr. Hendriks and Mr. C. Ingall were read. Mr. Martin, Act. of the *Brit. Empire*, supported the £261,000, the cost of amalg., as an asset, and the Court took the same view. Mr. Walker, B.A., the Co.'s Act., contended for the solvency of the Co. He had based his estimate upon materials supplied by the Directors. Out of the assets, £32,000 was invested in Consols, in conformity with the clauses of the Special Act of 1859 already quoted. The proceedings were again adjourned.

A rep. by Mr. Woolhouse was mentioned at the hearing. He had prepared a scheme for the abatement of the contracts, which might apply in case of reconstruction.

On the 15 Oct. the hearing was resumed. The Court intimated to the counsel for the petitioners that the only questions which he had to determine were two—those of fact and law. The *onus probandi* rested with the petitioners of proving that, taking into account the whole amount of the assets and the uncalled cap., the Co. was insolvent. It was, he added, a question whether the Act applied to this case, considering the circumstances of the petitioners. On this occasion Mr. Fry appeared for 469 shareholders, holding 145,875 out of the 400,000 shares; and for 5402 pol.-holders, ins. to the extent of £1,456,950 (about one-sixth of the whole); and contended that, as the Co. was in a solvent position, it was for the interest of them all that it should go on. Mr. Locock Webb appeared for the Irish pol.-holders, and said that his clients felt most strongly that no ground whatever had been made for winding up the Co. Mr. Cotterell contended that not a single word of evidence had been given to show that a winding-up would be for the benefit of the pol.-holders.

The V. C. the same day (15 Oct. 1869) dismissed the petitions with costs. He said, at the conclusion of a somewhat rambling judgment: "I am of opinion that the petitioners have failed to prove that which is requisite, namely, that the Co. is in a state of insolvency—and that being so, the petition is dismissed with costs." Notice of appeal was given, but was not proceeded with.

At the close of the same month the Co. summoned Mr. Joseph Bentley for "libel," in having stated in one of his numerous publications that the Co. was "insolvent." He was committed for trial on the charge. He ultimately pleaded guilty, and was bound over in the sum of £500 to appear and receive the judgment of the Court when called upon to do so.

On the 10th Nov. an extraordinary gen. meeting of the shareholders of the Co. was held in Lond. A rep. from the directors was read. It stated that, immediately after the petitions were presented, they had caused to be prepared a statement of the assets and liabilities of the Co. This showed a bal. in favour of the Co. of £107,205; and the cap. at call was £595,550 beyond. This statement had been verified by an independent accountant, Mr. H. E. Bird. In the end a Committee was appointed to act with the directors in the man. of the bus. The meeting was adjourned to receive a rep. from the Committee.

On the 17th Nov. the adjourned meeting was held. The Committee presented a rep., apologizing that it could not be more complete by reason of the shortness of time allowed for its preparation. This rep. stated that the bus. of the Co. was both valuable and profitable, but admitted that reduction in the expenses of man. was necessary in order to give the share and pol.-holders any advantages. It proceeded:

> Your Committee cannot refrain from stating their opinion that there has been a gross mismanagement and recklessness in the numerous purchases of, or amalg. with other Cos.; as also in the enormous and unjustifiable ann. expenditure. These errors the Committee consider are due—first to the want of proper vigilance and supervision on the part of the directors, and the great power acquired by the gen. man., and which power has frequently been most improperly exercised.
>
> The Committee cannot concur in the correctness or at all understand how the Act. arrived at the valuations and rep. he made, on the faith of which a bonus was declared; and they consider that the auditors have by no means fulfilled their duties; as even a cursory investigation of the So.'s accounts and proceedings would have shown to them that they were not justified in constantly passing the ann. accounts. . . . .
>
> The Committee unanimously concur in the following recommendations, and hope that both pol.-holders and shareholders will adopt them.

These recommendations were—1. That Man., Act., and Auditors should at once resign their positions. 2. That the directors as a body should at once place their resignations in the hands of the Committee, agreeing to act with new directors to be appointed. 3. That the future board should be not less than 7 or more than 10; and that its remuneration should not exceed £1000 p.a. for the next 3 years. 4. That an entire change be made in the system of paying agents and transacting agency bus. at home and abroad. 5. That the chief office staff be further organized. 6. That a call of 10*s*. p. share be at once made. 7. That the D. of Sett. be altered so as to allow pol. as well as shareholders to act as directors. 8. In future accounts be sent to shareholders 14 days before gen. meetings. 9. The appointment of local boards in the principal towns to consist of pol.- and shareholders, with such powers as might be agreed upon with the gen. board. If these suggestions were adopted, the Committee believed that the Co. would be placed "on a sound and satisfactory basis, and that with ordin. care and active and honest management the *European* may yet take rank among the first and most highly valued of assu. sos." Mr. Child, of Manchester, was the Chairman of this Committee; Mr. A. R. Bristow, Sol. to the Admiralty, was also a member.

The Rep. was adopted, and the whole of the Directors and the Man. placed their resignations in the hands of the Committee. The new board were authorized to determine by arbitration the proper sum to be paid to Mr. Lake under his agreements. Finally new directors were appointed, including three of the former members of the board, of whom the late Chairman, Sir Frederick Smith, was one.

The year was finished up by a circular from the re-elected Chairman to the pol.-holders, urging them to continue to support the Co.

1870.—This year opened with a meeting of share and pol.-holders, convened at Birmingham by Mr. Watts, of Manchester, at which he declared that the pol.-holders were safe; and with a view of re-estab. the Co. upon a permanently prosperous basis, he invited those present to take out new pol., and induce their friends to do so. It was unanimously resolved to assist the directors to place the Co. on a prosperous basis!

In March Mr. H. B. Parminter, who had been an officer of the Co. for upwards of 20 years, latterly as cashier, was appointed Man.

On the 2nd June the ann. gen. meeting was held, when all passed off quietly. The directors' rep. said the new prems. of the past year had been £27,592; the gross prem. income of the year £311,873—showing a falling off of about £26,000 as compared with the previous year. "Recently, however, a large number of ins., which had lapsed after the proceedings in Chancery already referred to, have been reinstated." The gross revenue of 1869 had been £330,898. The life and guar. claims, "including bonus add.," £255,072. The expenditure for expenses and commissions had been £72,782.

A few days later, however, another petition was presented to the Court of Chancery for the winding-up of the Co.; this time by Mr. Robt. Crowe, a shareholder. On the 29th June the petition came on for hearing, but was dismissed, on the ground that the petitioner had not paid his calls as a shareholder. This decision was afterwards appealed against. It was stated at this hearing that the Co. had received in all £3,850,000 in prems. since the commencement of its bus. The directors afterwards commenced an action against Mr. Crowe and his sol. for attempts to injure the Co., alleging that these were instigated by unworthy motives and without reasonable cause.

In August the affairs of the Co. cropped up in the Bankruptcy Court in Edin., in consequence of Mr. Rob. Crawford having been then recently sequestered, by reason of proceedings at the suit of the Co. Later in the same year all disputes between Mr. Crawford and the Co. were terminated by the payment to the Co. of £500.

In Oct. a somewhat significant occurrence took place. The life pol. and the annu. on the life of the late Man., Mr. Lake, were offered for sale by public auction. The annu. which had been granted on his retirement was for £400 p.a. payable quarterly; but was to terminate if the "So. should become bankrupt, commence to be in liquidation, or cease to carry on their present bus." It realized £710, being about 1¾ years' purchase; Mr. Lake being then 53 years of age. The life pol. were purchased by the Co. itself. In the accounts for the year there was this item: "H. Lake (in settlement) £2615."

During the remainder of the year the affairs of the Co. did not again come prominently before the public, but various rumours were from time to time afloat in actuarial and legal circles.

1871.—The year opened by the announcement that several gentlemen of position had joined the board as directors.

It became known early in the year that Mr. A. G. Finlaison, National Debt Office, was retained by the directors to make a valuation. The results were looked forward to with great interest; but they were not made generally known until the ann. meeting.

On the 1st of June the ann. gen. meeting was held. Gen. Sir Fredk. Smith presided. The rep. of the directors showed that the gross income in 1870 was £242,628 [of which £28,601 was from the guarantee department]; while the claims paid on life and guar. pol. had been £234,827; but it was stated that a considerable portion of this amount really belonged to previous years. The expenses of man. had been £43,000, showing the reduction of about £30,000 p.a. which had been promised by the new board [£49,815 had been actually paid, but the £6815 really belonged to former years].

The bal.-sheet showed the investments to stand at a net sum of £358,213; cap. not paid up, £499,883. The cap. account stood as follows on 31 Dec. 1870: 311,733 shares of £2 10*s*. issued, £779,332—increased by 2 bonuses to £802,712. There was paid up on

309,596 shares, £274,106; on 2137 shares, £5342. The bonus was £23,379 [which it had been thought might be recovered]; leaving bal. of account £499,883, as already stated. The revenue account showed the total payments to have been £363,650; while the total receipts had only been £242,628—leaving the Co. £121,022 to the bad on the transactions of the year.

Mr. Finlaison's rep., dated 6 May, 1871, was as follows:

> In conformity with your instructions, I have received from your late Act., Mr. Younger, complete details of all the pol. in existence in the *European* Assu. So., which were in force on 31 Dec. 1869, and which are ranged as usual under each year of birth, and similarly so in respect of each life ins. co. which has been amalg. or united with this inst.
>
> I have also received the computations of Mr. Younger, but the results of which were not collected together by him; and I have likewise been supplied with the statement of assets of the asso., together with the amount of unpaid calls on the cap. of the Co.
>
> Since the foregoing lists were sent to me, I have received a list of pol. which it was discovered had lapsed previous to the 31 Dec., and which had been erroneously inserted in the schedules.
>
> I have carefully examined a sufficient number of computations in the case of each Co. to satisfy myself of the accuracy with which the work had been performed by Mr. Younger.
>
> The basis of valuation made use of for the purpose of the calculations was the *Carlisle* T. of Mort., and the rate of int. 4 p.c. I quite approve of the adoption of this T. and the rate of int.
>
> The general results of the valuation may be stated as follows:

	£
Liabilities—Present value of sums assured for whole of life	3,360,146
Present value of sums assured—miscellaneous	398,793
Present value of life annu.	138,068
	3,897,025
Abate value of pol. erroneously included	10,040
	3,886,985
Balance—*Surplus*	95,165
	£3,982,150
Assets—Present value of office prem.—whole life	2,781,040
Present value of office prem.—miscellaneous	278,060
Balance of account 31st Dec. 1869	371,800
Unpaid calls	551,250
Total	£3,982,150

[It will be observed that the last two items did not agree with the bal.-sheet before the meeting.]

> From this it will be seen that a surplus of £95,165 is shown, assuming that the whole of the cap. is paid up.
>
> By the decision of V. C. James, and also by the 21st sec. of the Life Assu. Cos. Act [1870], the unpaid portion of the proprietary cap. is entitled to be reckoned as an asset, and I have so treated it. But I am bound to inform you that it is your duty at once to proceed to call up a sufficient amount of cap. to the end that it may be properly invested and bear interest.
>
> I have been supplied with a statement showing that the ann. average profits of the guar. bus. for the last 5 years exceed £19,000 p.a.
>
> I have had careful returns made to me of the number of pol. lapsed during the last 15 years. From this statement I gather that the profits under this head have been great.
>
> I am of opinion that the profit on the guar. bus. and on lapsed pol. will be sufficient to defray all expenses of the Co., if those expenses are kept within reasonable bounds.
>
> In the foregoing rep. I have confined my obs. merely to matters of fact, being of opinion that the shorter and more condensed the rep., the better it would be understood by the pol.-holders and shareholders; and I must confess that the affairs of the So. are in a much more favourable condition than at the commencement of my task I had been led to expect.

The following para. was given in the directors' rep.:

> It is hardly necessary to remark that the petitions presented against the So.—successfully resisted as they were—by lessening for a time the confidence of the public, could not fail to arrest the progress of the So.'s bus. *It may, however, be fairly presumed that the effect of Mr. Finlaison's statement*, and the efforts which the directors are making to produce the most rigid economy in the expenses of the man. of the bus. entrusted to their care, will restore that confidence which ill-disposed persons have done so much to destroy.

The meeting was a stormy one, and various suggestions as to amalg. or winding-up were made, but none of them were received with favour by the shareholders present. Mr. Alderman Carter, M.P., of Leeds, made one remark worthy of note. He said: "We have had foreign bus.; and, gentlemen, it has been our ruin to have had an ambition for getting bus. all over the world; for none of these foreign branches have done much for us, nearly all having been regular bleeders to the parent So, and have been running away constantly with the assets of the So., instead of the assets being brought to meet the liabilities." The rep. was accepted, and the accounts were passed.

The accounts and valuation having now revealed the true state of the case as regards the Co. to those who knew how to read them, various suggestions were made as to what course would be most advantageous for the Co. to pursue. The *Post Mag.* in a leader, 10 June, suggested that it should try the "Positive plan;" others suggested remedies equally hopeless. These, however, were all cut short by the presentation of another petition—this time by Mr. Joseph Greenough, a contributory, holding 100 shares.

On the 23 June the petition came on for hearing before V. C. Malins. He was of opinion that under the 21st sec. of the Life Assu. Cos. Act, 1870, a preliminary inquiry should take place in order to see if there was a *primâ facie* case for a winding-up. The sec. of the Act. is as follows:

> 21. The Court may order the winding-up of any assu. co., in accordance with the Cos. Act, 1862, on the application of one or more pol.-holders or shareholders, upon its being proved to the satisfaction of the Court that the co. is insolvent; and in determining whether or not the co. is insolvent, the Court shall take into account its contingent or prospective liability under pol. and annu. and other existing contracts; but the Court shall not give a hearing to the petition until security for such an amount as the Judge shall think reasonable shall be given; and until a *primâ facie* case shall be estab. to the satisfaction of the Judge.

This being the first case which had arisen under the Act, it was resolved to remit the question to the Lord Chancellor. He concurred with the V.C. In the mean time another petition was filed; this time by Mr. Charles Holt, who was a pol.-holder as well as a shareholder.

On the 7th July the two petitions came on for hearing before V.C. Malins. The hearing took the shape of a preliminary inquiry. Affidavits in proof of the insolvency of the Co. by Mr. Parminter, the late Man., and by Mr. Birmingham, late a director of the Co., and by others, were read. It was shown by these that many of the shareholders now on the regis. were utterly unable to pay the calls upon the shares they held. The V. C. said that in view of the general question of solvency, he considered a *primâ facie* case had been made out. He did not consider he would be justified in treating the unpaid calls as assets with the facts now submitted before him. This was on the 8th July.

On the same day a special general meeting of the shareholders was held for a two-fold purpose: (1) to alter the D. of Sett. so as to enable the directors to refuse to regis. fictitious transfers; (2) that a Man. Director might be appointed, instead of a Man. It was understood that Mr. Alderman Carter, M.P., had been selected for the position.

On the 20th July an important and independent meeting of the share and pol.-holders was held; and a Committee consisting of 7 pol.-holders and 2 shareholders was appointed to confer with the directors on the best means of satisfactorily arranging the affairs of the Co.

On the 22nd the petitions were again before the Court, but nothing was done.

On the 24th the counsel for the Co. practically admitted the insolvency of the Co., and now prayed for time to enable the directors to make an attempt to reduce the contracts under the 22nd sec. of the Life Assu. Cos. Act, 1870, and thus to reconstruct the Co.; the petitions in the mean time to stand over. The counsel for the petitioners still pressed for an order to wind up.

On the 25th the subject was again argued; and finally, with the consent of all parties, the following order was made by the Court:

> The So. not asking to file evidence, and the Court being of opinion that the So. has been proved to be insolvent, on the application of the So., let the further hearing of the petition stand over to the first petition day in Michaelmas Term, to enable the So. to propose any scheme under the 22nd sec. of Mr. Cave's Act, or otherwise. Liberty to any person to apply to the Court or to the Vacation Judge in the meanwhile. Liberty to the So. to pay in the interim on account of any claim against the So. all annu. which fall due not exceeding £50 p.a. In case of larger amounts, the So. to have discretion to pay on them sums not exceeding a like sum of £50. *All prems. due from this day to be carried to a separate account, without prejudice to any questions.* So. to pay all rent, rates, taxes, salaries of clerks, wages of servants, and office expenses, and the reasonable expenses of the Committee appointed on Thursday last.

Steps were now taken by the joint committee and board to endeavour to re-insure the outstanding risks of the Co. Various Cos. were named, and various proposals were made; but finally it was conceded that no Brit. Ins. Co. was large enough to undertake the burden implied. Two American offices, the *New York* Life, and the *Equitable* of N.Y., either of which was sufficiently strong, were named; but it was a question of terms. The American cos. could afford to meet the case in the matter of the rate of int. for the improvement of the funds—a point of very great importance under the circumstances. The *New York* Life had agreed to a 5 p.c. valuation on *Experience* T. No. 1. In each case, however, there was proposed to be some reduction of the contracts. Mr. Bunyon and Mr. Pattison were consulted on behalf of the *European* pol.-holders. Mr. E. W. Bryant of N.Y. acted for the *New York* Life; and Mr. Phillips, the Act. of the N.Y. *Equitable*, for that Co.

On the 24th Oct. a meeting of pol.-holders was held to receive a Rep. from the Committee appointed in July. The attendance was very large, and the discussion very lengthy. Finally, at the adjourned meeting on 31st Oct., it was resolved to proceed with the offer made by the *New York* Life. On the 18th a meeting of the Irish pol.-holders was held in Dublin, and at that meeting a different conclusion was arrived at. But at a subsequent meeting they agreed to the proposal.

The directors gave notice of their intention to apply to Parl. for an Act giving powers to arrange the affairs of the Co.

On the 3rd Nov. the subject of the petitions again came before V. C. Malins. In the mean time another petition had been presented by the Guardians of the Ruthin Union, based upon a claim under a guar. pol. The matter stood over by consent.

Mr. Bunyon, who had been requested by the committee of pol. and shareholders to rep., presented his rep. dated 30 Oct. 1871. His valuation was based upon the state of affairs as at 30 June last. There were then in force 23,926 pol., ins. £6,067,879, at an ann. prem. of £196,615. There were also 451 annu. contracts securing £18,590 p.a., a few of which were deferred annu. subject to ann. prems. of £248. Valued by the *Experience* T. No. 1, at 4 p.c. int., the present value of these risks on a pure prem. valuation was £1,652,844; on a gross prem. valuation (*i.e.* valuing the loading), £1,097,459—difference £555,385. If 10 p.c. only were added for future expenses, the amount would stand at £1,311,143. The assets reported to him were £350,000, but these were now to be decreased by arrears of claims, etc. On the whole, he considered the present deficiency in the funds of the Co. to be £1,045,163. He supported the view of trans. the bus. to one of the American offices.

Mr. Pattison's Rep., dated November, 1871, gave the principal figures the same as Mr. Bunyon's, the valuation having been a joint one; but assuming the assets to be £400,000 (as the mean of the several estimates), the deficiency would be £1,025,163. He then considered the various proposals which had been made for meeting the circumstances of the Co.; and arrived at the conclusion that a reduction of the contracts, combined with the proposals of one of the American cos., would be most advantageous.

Various committees were appointed in provincial towns to protect the interests of the pol.-holders.

On the 10th Nov. the matter again came before V. C. Malins, and he was urged to appoint provisional liquidators; accordingly he appointed Mr. Bunyon and Mr. Pattison. In other respects the petitions to stand over.

On the 17th Nov. V. C. Malins was again pressed to make some definite order; but he simply confirmed the appointment of the two provisional liquidators, adding Mr. Low as a third. He discontinued the order of July as to payment of annu., and gave orders for Parl. notices for arbitration not to be proceeded with. The petitions to stand over again.

One of the first acts of the provisional liquidators was to trans. the guarantee branch to the *London Guarantee and Accident* Co.

About this period Mr. Rob. Crawford commenced to issue a series of pamph. regarding the past affairs of the Co.; but as we do not see the point of these, we do not dwell upon them.

On the 20th Dec. Mr. Bryant, having completed his investigation, sailed for New York, to report to the officials of the *New York* Life. Mr. Bryant had found that the past mort. of this Co. had exceeded the proper rate by about 10 p.c.; and he further considered that many of the best lives had withdrawn from the Co. For these reasons mainly the *New York* Life declined to proceed any further with the negociations. The *Equitable* of N.Y. declined to take over any pol. unless accompanied with a new medical examination of the life. This being deemed impracticable, both negociations fell through.

1872.—The new year brought a sudden change. On the 12 Jan. the several petitions (and a new one by Mr. Garlant) came on for further and, as it turned out, for final hearing. A rep. from the provisional liq. was read. It was accompanied by a fresh series of cash accounts, which made matters something worse than they had previously appeared. The negociations with the American cos. had fallen through; the provisional liq. had not held the meetings of share and pol.-holders they had undertaken to hold; and it was therefore urged that an order for compulsory liq. would be most beneficial for all parties. The directors of the Co. still asked for further time. But an order for compulsory winding-up was made. The three former liq. were appointed (after a great fight to introduce others).

It will not be out of place here to offer a few remarks upon the prob. causes of the failure of this Asso.; and we think they may be included under two heads. 1. A somewhat reckless driving to secure a large volume of bus., through the intervention of local managers, etc., from which circumstance not only were the expenses of man. greatly increased, but a certain per-centage of unsound lives crept in by ways and means beyond the immediate control of the head office management. 2. But chiefly by reason of unwise amalg., whereby engagements were accumulated upon the Life Fund which it was totally inadequate to bear. If the manager had been fortunate in having the advice of a board of directors possessed of some mercantile or financial knowledge, it would have been seen that the true policy was to replace the deficiency in the Life Fund consequent upon each amalgamation, by calling up a corresponding amount of capital. If the amalg. were wise ones, the cap. so called up and applied would be replaced over some 20 years; and the Co. would have been kept sound in the mean time. The measure of available cap. should have been the measure of the capacity for amalg.; then the pol.-holders would be kept safe, and the Co. intact; or if any loss, it would fall upon the shareholders only.

EUROPEAN Assurance So., Winding-up.—On the 12th Jan. 1872, as we have seen by the preceding narrative, the affairs of the Co. passed into compulsory liq. under the Court of Chancery, upon the order of V. C. Malins, made apparently, not upon any one petition, but upon the several petitions before him.

One of the first acts of the liquidators in their new capacity was to intimate to the pol.-holders that they need no longer pay their renewal prems. in order to keep alive their claims against the Co. under liquidation. About £37,000 had been paid to a special account during the interregnum which had ensued.

It will be convenient at this point to give a summary of the several asso. which became more or less affected by this liq. in consequence of their pol. having merged into the *European* by amalg. or otherwise.

Consecutive Nos.	When founded.	Name of Office.	Amalg. Pedigree.	When merged into *European.*
1	1853	Accumulative	1853 Amalg. with *Anglo-Australian*	1865
2	1851	Age	1856 Amalg. with *Engineers*	1865
3	1863	Alexandra F. and Guar. etc.	1864 Guar. bus. trans. to *European*	1865
4	1853	Anglo-Australian	1858 Trans. to *British Provident*	1865
5	1851	Athenæum	1856 Bus. trans. to *British Provident*	1865
6	1820	British Commercial	1860 Amalg. with *British Nation*	1865
7	1854	British Nation	1865 Amalg. with *European* No. 2	1865
8	1863	,, ,, Fire		
9	1850	British Provident	1859 Amalg. with *British Nation*	1865
10	1857	British Shield	1857 United with *London and P. Prov.*	1865
11	1846	Catholic Law and Gen.	1857 Amalg. with *Phœnix* Life	1865
12	1856	Commercial Life	1858 Trans. to *English Widows*	1865
13	1854	Diadem	1857 Trans. to *British Provident*	1865
14	1848	Engineers and Masonic	1858 Bus. trans. to *Eng. & Irish Church*	1865
15	1850	English and Cambrian	1856 Amalg. with *Commercial* Life	1865
16	1853	English and Irish Church	1861 Trans. to *British Nation*	1865
17	1847	English Widows Fund	1860 Amalg. with *British Nation*	1865
18	1852	Equitable Provident	1854 Merged into *People's Provident*	1859
19	1819	European No. 1	1858 Amalg. with *British Provident*	1858
20	1855	General Acci. & Compensa.	1857 Trans. to *British Nation*	1865
21	1853	General Indemnity	1857 Trans. to *English Widows*	1865
22	1852	Householders and General	1858 Trans. to *Eng. and Irish Church*	1865
23	1846	India and London	1860 Trans. to *European* No. 2	1860
24	1849	Industrial & Gen. L. & Dep.	1854 Trans. to *People's Provident*	1854
25	1849	Industrial & Gen. L. & F. So.	1854 Merged into *People's Provident*	1854
26	1855	Life Assu. Treasury	1861 Trans. to *Waterloo* Life	1865
27	1855	London Equitable	1863 Trans. to *British Nation*	1865
28	1854	London & Provincial Prov.	1861 Trans. to *British Nation*	1865
29	1858	London and Yorkshire	1862 Trans. to *Wellington Rev.*	1865
30	1854	Magnet	1860 Trans. to *Waterloo*	1865
31	1844	National Assu. and Invest.	1861 Trans. to *Waterloo*	1865
32	1853	People's Assu. So.	1854 Amalg. with *United L. and Guar.*	1854
33	1854	People's Provident	1859 Became the *European* No. 2	1854
34	1848	Phœnix Life	1860 Trans. to *British Nation*	1865
35	1851	Prince of Wales	1857 Trans. to *People's Provident*	1857
36	1847	Professional	1861 Trans. to *European* No. 2	1861
37	1836	Royal Naval, Military, etc.	1866 Trans. to *European* No. 2	1866
38	1846	Tontine	1849 Trans. to *Engineers and Masonic*	1865
39	1862	Town and County Fire	1864 Amalg. with *European* No. 2	1864
40	1849	United Life and Guar.	1854 Amalg. with *People's Provident*	1854
41	1849	United Mut. Mining	1857 Amalg. with *People's Provident*	1857
42	1850	United Service and Gen.	1857 Amalg. with *People's Provident*	1857
43	1849	Universal Provident	1855 Amalg. with *Engineers*, etc.	1865
44	1853	Wellington	1863 Amalg. with *British Nation*	1865
45	1851	Waterloo	1862 Trans. to *British Nation*	1865

In this list is contained 45 separate inst.; if we include *European* No. 2, as distinct from *People's Provident*, the number is increased to 46. This contained all the cos. named in the separate schedules of the two Arbitration Acts, and one Co. in add., viz. the *Universal Prov.* The detailed hist. of each asso. is given under its alphabetic name in these pages.

The winding-up of the *European* opened up questions relating to each of these asso. whose pol. or annu. contracts remained still in force.

The liq. caused to be prepared elaborate accounts of the past and present position of the Co., which were laid before the Court, as a necessary preliminary to more active measures.

It is almost impossible to describe the conflict which ensued shortly after the order for winding up had been made. In the first place, there were two Bills before Parl. The one promoted by the late directors, which in effect prayed for the appointment of an arbitrator. The other promoted by the liq., which required the authority of Parl. that the Co., and those associated with it, be wound up under the direction of the Court of Chancery—V. C. Malins being specially named as the Judge who was to exercise the powers of the Court. Then several of the amalg. cos. were passing into liquidation, and the great point of conflict was, whether the liq. of the *European* should also be the liq. of these other asso., in some of which it was contended there would be interests entirely conflicting. The question was ultimately solved by the passing of the Arbitration Act, hereinafter referred to.

There was also before Parl. a Bill entitled, "The Albert and European Life Assu. Cos. (Inquiry) Bill," which, as its title implies, sought for powers to appoint a Commissioner specially to inquire into the past transactions of these two asso. This measure was never passed.

On March 26 the liq. put up for sale by auction a large number of re-ins. pol. held by the Co. It was afterwards alleged [*Charlsley's case*, April, 1873], that the price at which some of these pol. were sold was far below their value.

On 31 May an application was made to V. C. Malins by the liq. to be allowed to repay prems. which had been placed to special account during hearing of petitions, etc. This was agreed to. A further and remarkable application was made to be allowed to make a "special allowance" by way of surrender value to a pol.-holder who was in bad health. This was refused.

On 11 June, on the Arbitration Bill coming up for third reading in the House of Commons, a discussion arose as to the propriety of Ex-Lord Chancellors being allowed to act as arbitrators in such cases. The motion was not pressed to a division, or it is difficult to say what might have been the result. A petition to the like effect was presented to the House of Lords by the Irish pol.-holders, shareholders, annuitants, etc.

The liq. then entered upon its next stage. It is but fair to note, in reference to the small actual results accomplished by these first liq., that the affairs were during their whole term of office simply regarded as but in a transition state. It became the policy of all concerned therefore to defer matters until a more definite authority had been created.

EUROPEAN ASSURANCE SO., WINDING-UP UNDER ARBITRATION.—On the 25 July, 1872, the Act under which the winding-up of this So. by arbitration was to be conducted received the Royal Assent. It appears to have been compounded from each of the bills orig. before the House.

The measure as passed is known as the 35 & 36 Vict. c. cxlv.—*An Act to Effect a Settlement of the Affairs of the European Assu. So. and of other Cos.* Its more material portions we propose to give. It recites:

> And whereas the *European* So. at divers times purchased, on various terms, the assets and business (subject to the liabilities on pol., annu., endow., and otherwise) of the following cos.; that is to say,—1. The *Athenæum* Life Assu. So. 2. *British Nation* Fire Ins. Co. Lim. 3. *British Nation* Life Assu. Asso. 4. *European* Life Assu. and Annu. Co. 5. *India and London* Life Assu. Co. 6. *Industrial and Gen.* Life Assu. and Deposit Co. 7. *Prince of Wales* Life and Education Ins. Co. 8. *Professional* Life Assu. Co. 9. *Royal Naval, Military, and East India* Co. Life Assu. So. 10. *United Guarantee* and Life Assu. Co. 11. *United Mutual Mining and General* Life Assu. Co. 12. *United Service and General* Life Assu. and Guar. Asso.:
>
> And whereas, the *European* So. gave to all or some of the said selling companies, as one of the terms on which the respective purchase was expressed to be made, a general indemnity against claims, whether on pol., annu. and endow., and otherwise, current at the time of the purchase, or otherwise.

The Act then sets forth the various offices which each of the above twelve companies had taken over, and in which indemnities had also been given; all of which are included in the list given in the preceding art.; and then recites that the following of the amalg. cos., viz. the *Athenæum* Life, the *Professional*, *British Provident*, *English and Irish Church and University*, *English Widows Fund*, *Phœnix* Life, *Waterloo* Life, *General Indemnity*, *Commercial and General Annuity*, *Life Assurance Treasury*, and *National* Ins. and Investment Asso., were in course of winding-up in the Court of Chancery previously to the 10th June, 1871; and that since that date the *Royal Naval and Military*, etc., Co., and the *British Nation* Co. had gone into liq. It proceeds:

> And whereas in the circumstances hereinbefore appearing grave questions have arisen, and it is apprehended will arise, between the *European* So. on the one hand, and the aforesaid several cos. on the other hand; and also among some of the last-mentioned cos. as between one another.
>
> And whereas the pol.-holders, annu., endow.-holders, and other creditors of the *European* So., and the said other cos., except such of them as have claims on such of the said cos. as are solvent, are in danger of losing a large portion of their claims on account of the insolvency of the *European* So., and of such of the said other cos. as are insolvent, and the risks and costs of the liq. of the *European* So., and of the other said cos.
>
> And whereas it may be expedient that the liabilities of the *European* So. and of the said other cos., or some of them, on pol., annu., and endow., should not be disposed of as immediate claims in the ordin. course of liq., but should be met, subject to any necessary deductions, at maturity; and for this purpose that the life assu. bus. of the *European* So. should be carried on to its natural termination, by means of the trans. of the same to another co. upon terms to be agreed upon, or by a sale of the goodwill of the said bus.
>
> And whereas in the ordin. course of liq. it would be impossible to obtain the assent of the creditors of the *European* So. and the said several other cos. to any scheme of trans. or arrangement, unless all the said cos. were in liq., and all the creditors thereof respectively had finally proved their debts.

For these reasons the appointment of an Arbitrator had become desirable. The Act, therefore (sec. 3), appoints the Right Hon. Richard Baron Westbury Arbitrator. The matters referred to him are set out in sec. 4, as follows:

> (*a.*) The relative rights, liabilities, and interests of the several absorbed and scheduled cos. on the one hand, and of their respective creditors, debtors, shareholders, and contributories, on the other hand. (*b.*) The relative rights, liabilities, and interests of the several absorbed and scheduled cos. as between each other. (*c.*) The claims of the several absorbed and scheduled cos., or their respective creditors, shareholders, and contributories, against any person, and of any person against those several cos. in respect of any payment made, or of anything done or omitted by or on behalf of any of those cos., or by any person in relation to the affairs of any of those cos. (*d.*) All matters in question as between all parties in all liq. of any of the several absorbed and scheduled cos., and in all suits, actions, and proceedings, relating to the affairs of the several cos., and every such liq., suit, action, and proceedings. (*e.*) Any claims and matters in question between any present or former shareholder of any of the several absorbed and scheduled cos., and any trustees, directors, or officers of such cos. respectively, in respect of any alleged fraud, misfeasance, or nonfeasance, misappropriation or otherwise. (*f.*) Generally the winding-up and final settlement of the affairs of the several absorbed and scheduled cos.

Sec. 5 gives power to the Arbitrator to settle a scheme either in form of re-construction or re-constitution, or in the form of a trans. Sec. 6 gives special power to the Arbitrator to do all or any of the things named, among those powers being the following:

> (IV.) To make such deductions, present or future, fixed or contingent, from liabilities or claims, and to establish such funds, securities, guarantees, trusts and powers, as appear to him expedient and equitable.
>
> (V.) To reduce the amount of the contracts of all or any of the scheduled or absorbed cos. on such terms and subject to such conditions as he thinks just.
>
> (VI.) To take the advice and opinion of actuaries, surveyors, and other experts, and to adopt and act on any such advice or opinion if and as far as he thinks fit.

Sec. 7 gives power to the Arbitrator to deal with assets and special funds; while sec. 8 is as follows:

> 8. The Arbitrator may settle and determine the matters by this Act referred to arbitration, not only in accordance with the legal and equitable rights of the parties as recognized in the Courts of Law or Equity, but on such terms and in such manner in all respects as he in his absolute and unfettered discretion thinks most fit, equitable, and expedient, and as fully and effectually as could be done by Act of Parl.

Sec. 9 defines the general jurisdiction of the Arbitrator, and appears to give him all the powers under all the Courts, either here or in the Colonies, and under all the Acts of Parl. in force, "and nothing in this Act shall be construed as restricting the generality of this sec." 10. Prohibits the proceeding of any suit, action, or other form of legal proceeding after the passing of this Act. 11. Formally stays proceedings. 12. Orders all moneys, securities, books, etc., to be given up to the Arbitrator. 13. The liquidators in the several cos. to act under the direction of the Arbitrator. 14. Taxation of costs. 15. Power to Arbitrator to direct proceedings in other Courts, and to adopt the judgment of any such Court. Sec. 16 to 20. Powers as to Arbitrator's Court. The award of Arbitrator to be made within one year from the passing of the Act, or within such extended period as the Arbitrator himself should appoint. 21. Certificates made by Arbitrator to be binding. 22. Notices to be gazetted and award enrolled. 23. Gives power to trustees and others to accept substituted pol. 24. Arbitrator to appoint registrar, clerks, etc. 25. Expenses to be paid under order of Arbitrator, including a sum not greater than 3500 guineas to himself. 26. In case of vacancy in office of Arbitrator, the Lord Chancellor to appoint another. 27. Costs of Act, and also costs of *Brit. Nation* Liq., to be paid out of funds of *European*.

Then follows a schedule which contained 40 of the cos. already given. We have substituted the title of *People's Provident* for that of *European* No. 2, as given in the schedule; and we have included in our list the names of the cos. given in the schedule of another Act to be hereafter referred to.

The first act of the Arbitrator was to dispense with the services of the former liq., Messrs. Bunyon, Pattison, and Low. This was not done in a very gracious manner. Messrs. John Young and S. L. Price were appointed joint official liquidators. Mr. F. S. Reilly was appointed assessor; Mr. T. P. Abrahams, sec.; Mr. Preston, assistant sec.; Messrs. Mercer and Mercer, solicitors. It will be observed that several of these gentlemen had been officially connected with the *Albert* liq.

Early in Aug. the Arbitrator issued an order to the effect that all persons having any scheme for re-construction were to file it before 5 Sept., in order that it might receive the consideration of the Arbitrator.

During the same month the list of contributories to the *European* was settled, subject to some reservations. A call was then made for the whole of the unpaid cap. on the shares, in two instalments, payable 31 Aug. and 30 Nov. All loans on *European* pol. were called in. Notice to pol.-holders, annuitants, and gen. creditors, calling on them to bring in their claims, was pub.

On the 22nd Oct. the learned Arbitrator held his first formal sitting. Several of the questions set down for hearing were of vital importance; but instead of dwelling upon these specially here, it will be more convenient to arrange the subjects of his decisions under their alphabetical heads; dealing more particularly with those relating to the *European* Co. No. 2 internally; and not to the points arising in connexion with the affiliated asso., as we shall give the hist. of each of these asso. under its own proper title, and of the cases arising out of its trans. or amalg. We quote mainly from the *Law Times* Ed. of the Arbitrator's Reports; and insert in brackets the date of hearing, and the name of the Arbitrator in each case.

Claims [LORD WESTBURY].—As to the refunding of claims paid by the Co. between the time of the presentation of the petition and the order to wind up, *The National Bank's case* [Feb. 1873] was the first which came before the Arbitrator. In this case Lord Westbury was of opinion that it could not be inferred that the bank had notice of an adv. which only appeared in the *Gazette* the evening before receipt of the money: hence no order was made. [See CLAIMS under Lord Romilly's decisions in a later part of this art.]

Concurrent Proof [LORD WESTBURY].—Regarding concurrent proof against each of several amalg. cos., *Harman's* and *Pratt's cases* may be taken. Here [June, 1873] it was laid down that were there were four cos., which may be called respectively A, B, C, and D, and each of the cos. A, B, and C has made a trans. of its bus.: A to B, B to C, and C to D, and each of the three transferee cos. admits that it is liable on a pol. granted by the orig. co. A ; then, in the winding-up of the four cos., the pol.-holder is entitled to prove for the full amount of the claim on his pol. *against each of the cos. concurrently*—subject to the limitation of not receiving more than 20*s*. in the £. [Lord Romilly has since reversed this decision. See "Concurrent Proof" and "Novation" under his decisions in a later portion of this art.]

Guarantee Fund, Fidelity Branch [Lord Westbury]. — Regarding the "Gov. Guarantee Fund," which had been created under the Special Act of 1859, recited fully in our hist. of the Co., the question arose in what is known as the *Ruthin Guardians' case* [Oct. 1872]. The Act referred to contained this provision: "The Reserved Fund shall be liable after the Assurance Fund of the So. is exhausted, but not before, to make good the guarantees or securities of the So. granted in pursuance of this Act, and for no other purpose." The Co.'s D. of Sett., 1854, had provided that there should be two separate funds, the "Proprietors' Fund," arising from moneys paid on shares, etc., and the "Assu. Fund," the produce of prems., etc. In August, 1870, the Guardians of the poor of the Ruthin Union effected a guar. pol. to insure the integrity of their assistant overseer for a sum not exceeding £500; the pol. containing a proviso that the general funds and property and the subs. cap. of the So. were to be alone liable to make good any claim in respect thereof. In July, 1871, the Guardians were, in consequence of the defalcations of their assistant overseer, entitled to claim on their pol. the sum of £241 2*s*. 7½*d*. This sum was not paid, in consequence of the proceedings in the Court of Chancery with regard to the petition to wind up. On the 21st Oct. the Guardians filed a bill in Chancery for the payment of the sum.

It was now contended in support of the claim that since the "Assu. Fund," if not already exhausted, would necessarily be exhausted in payment of the other debts and liabilities payable thereout, they were entitled to have the amount of their claims paid at once out of the "Reserved Fund." This fund would be sufficient to pay all these guarantees, so that in any case the applicant would be paid in full; but the object was to secure a settlement at once, and not wait until the dividend of the *European* had been declared.

Lord Westbury said that on the threshold of the case the Arbitration Act seemed to bar the way. In the 7th sec. of this Act there was the proviso, "that nothing herein contained shall affect the Reserved Fund and the application thereof under the recited Act," viz. the European's Act, 1859. He should, however, interpret this proviso to mean that any dealing with the fund was subject to the limit of not imposing on it any kind of application that was in the smallest degree inconsistent with the language of the Act. He should hold that the "Proprietors' Fund" was a well to supply the "Assu. Fund," and that consequently the "Assu. Fund" meant the general assets of the So. Thus he should order that the applicants were entitled to prove their debt against the general assets, and to receive a div. *pari passu* with the ordin. creditors. After the receipt of the div. there would be liberty to apply for the payment of the residue out of the Reserved Fund.

The costs of the application were allowed; but inasmuch as there was no justification for the haste of the applicants in filing their bill, no costs would be allowed for the proceedings in Chancery.

The amount of this fund in June, 1873, stood at £34,333 18*s*. 7*d*. 3 p.c. consols.

Indemnities [Lord Westbury].—In the *British Nation Indemnity Claims case* [Oct. 1872], the question was whether the obligation of the *European* So. to indemnify the *Brit. Nation* Asso. was limited to the cap. of the *European*, or whether it was to be without any limit whatever.

The facts in this particular case were as follow: In March, 1865, the *Brit. Nation* Asso. became amalg. with the *European*. The whole of the bus. and assets of the *B.N.* were trans. to the *E.*, and the *E.* covenanted that it would undertake, pay, and perform all debts, assurances, and other engagements or liabilities of the Asso.; and that it would "at all times thereafter save, defend, keep harmless, and indemnified the *Brit. Nation*, and the individual proprietors of shares in the cap. thereof, from and against all actions, suits, proceedings, costs, damages, claims, and demands whatsoever, for or upon account or in respect of the same." The deed of the *European* So. gave the directors power to purchase the bus. of another co., but it contained a provision that in every contract to be entered into on behalf of the So. there should be a proviso limiting the scope and effect of such contract, so that the cap. stock and funds of the So. should alone be liable to answer and make good any claims on such contract.

The *Brit. Nation* now contended that, both the cos. being in liq., and claims having been made on the *B. N.* which the *E.* ought to have satisfied, the *E.* was under its covenant bound to indemnify the *B. N.*, and that without any limitation of liability.

Lord Westbury, however, held that there was no ground for making such an application. The *European* D. of Sett. never contemplated any liability on the part of the shareholders beyond their unsubscribed cap. Of course the directors could enter into contracts where the liability would be unlimited, with regard to the ordin. purposes necessary in carrying on the bus. of the So.; but every other contract must restrict the liability. This restriction was well known to the *B. N.* at the time of the amalg. So far as the D. of Amalg, is consonant with this restriction, it holds good; so far as it is not, it is *ultra vires*, and therefore naught. Thus the claims on the covenant to indemnify will be limited to the cap. of the *European* So.

Regarding the costs of winding up the *Brit. Nation*, and which formed part of the same question, his Lordship said the costs were not yet ascertained. He did not agree with Lord Cairns in holding [in cases arising out of the *Albert* amalg.] that none of the costs of winding-up should be included in the claim under the covenant to indemnify. It would be for the *B. N.* to come before him at some future period, and to say that the costs of their winding-up are so much, and the proportion of those costs attributable to the failure of the *European* to keep their covenant is so much, and then they might urge their claims to have that sum included in their proof.

In *Gardiner's case* [Jan. 1873] the following question arose. In the Special Act, 1859, of the *European* No. 2, it was enacted by sec. 9 that the No. 2 Co. should be liable for pol. whether issued by itself or *European* No. 1. It was now contended that every pol.-holder in the No. 1 Co. was compelled by this Act to look for payment to No. 2 Co. only. Lord Westbury held that this was not the meaning of the Act, and that the liability of No. 1 Co. still continued.

Novation [LORD WESTBURY].—Regarding Novation, the learned Arbitrator laid down the following as the conclusions at which he had arrived, "not as indicating the rule that I shall follow without further discussion, but as intimating what my impressions are, which the Bar will be quite at liberty to deal with, to show that they are mistaken or that they are injudicious or inexpedient."

> *First*, where there is an alleged case of novation, it is my impression at present that I must require of the co. which I will call the transferee co., proof that that co. had legal powers to grant new pol. to the pol.-holders of the transferor co. upon the same terms as are contained in their pol., or to take the pol. of the transferor co., and adopt them, and indorse them with the acceptance of the transferee co., so as to make them analogous to orig. pol. granted by the transferor co.
>
> *Secondly*, I shall require it to be proved before me that this power of the new co., that is of the transferee co., was made known to the pol.-holder, and that an offer was made to him to accept either a new pol. or an indorsed pol. of the transferee co.
>
> *Thirdly*, that the acceptance of such an offer or proposal by the pol.-holder shall be proved by acts which unequivocally denote his understanding and acceptance of that proposal. Now I use the word "unequivocal" for this reason, that I have to consider and decide matters of this description with a species of guide given me by the 7th clause of the Life Assu. Act, 1872. It may be very true that I could not hold myself at liberty to adopt that enactment and apply it to the cases to be decided by me; but I derive this light from the enactment, that the Legislature were satisfied that in many of these cases equivocal circumstances had been accepted, unfortunately, perhaps unjustly, as evidence of assent on the part of the pol.-holder, and that having regard to that, they deemed it right to require more unequivocal proof of the acceptance of the pol.-holder. Now, by that I may be guided so far as *to require acts on the part of the pol.-holder which shall prove to every one's reasonable satisfaction that he did intend to accept, and did accept the security of the substituted co.* These rules are, I conceive, quite in accordance with the principles of law fully estab. long anterior to arbitrations of this character. I propose, subject to your argument, to guide myself by those rules; and if I find no reason to alter them, or lay them aside in consequence of what may be urged against them,—and you will deal with them with perfect freedom,—then, if these rules are estab. as the principles that will guide my decisions, they will prevent very much uncertainty, and possibly will prevent a great deal of costly and unnecessary litigation. The pol.-holders must understand that if these rules are once estab., they will come here with any cases that may be at variance with them at their peril.
>
> Now I hope that this will serve to guide us in a certain degree in our path over the desert that we have to travel, and which we shall have to travel with very great pain, because it is impossible to see that this proceeding will be productive of much benefit to any body. This arbitration is an anomaly: it is only to be justified by its necessity; and its necessity is a great reproach to the judicial institutions of the country.

The application of the principles here indicated was made in *Blundell's case* [Oct. and Nov. 1872], supported with great force and learning by the authority of the Civil Law. This subject we shall have to review in a more precise manner under NOVATION. [We shall hereafter see that Lord Romilly has decided cases of Novation on entirely different principles.]

Premiums [LORD WESTBURY].—Regarding those who had not paid prems. during the interregnum created by the petitions, and those who had paid under the orders of V. C. Malins, the following decisions were arrived at:

1. Where any prem. became due, and the 30 days of grace also expired before the date of the petition to wind up, but the prem. was not paid by the pol.-holder, the pol. was void. Where the prem. became due before the presentation of the petition, but the 30 days of grace did not expire until after that date, and also where the prem. became due at any time during the period of insolvency, between the presentation of the petition to wind up and the winding-up order, whether the 30 days of grace expired before or after the winding-up order, in every such case the pol.-holder who had not paid such prem. was to have the option of paying it on presenting his pol. for valuation. In order to prove on a pol., all prems. that became due before the winding-up order were to be paid to the official liq.; the amount of the valuation of the pol. could not be set off against unpaid prems.

2. Those who had paid their prems. under either of the orders of V. C. Malins, or in accordance therewith, were now held to be entitled to receive them back, provided they abandoned their claims on their pol; but if they brought in their claims, such prems. were not to be repaid to them.

These principles were laid down in *Wallberg's*, *Marcus's*, *Sullivan's*, *Smythe's* and *Trustram's cases*—all arising in this winding-up.

Policy Value for Proof [LORD WESTBURY].—This question came up in *Wallberg's* and kindred cases [Oct. and Nov. 1872]. The first point was whether the prems. which were paid to the *European* between the presentation of the petition to wind up and the winding-up order were to be paid back or not. Usually there is but a short interval between these two dates; but in the case of this So. there was a space of 7 months, the petition to wind up having been presented on the 10th June, 1871, and the order to wind up not having been made until the 12th of Jan. 1872. During this interval some of the pol.-holders wholly abstained from paying any prems. at all; the others at first paid their prems. as they accrued due "to a suspense account until further order," in accordance with an order made by V. C. Malins. Others had paid their premiums in accordance with an order made by the V. C. on the 7th Dec. 1871, that the official liq. might receive prems. "upon the terms or condition that the respective persons paying them may (provided an order be made for the winding-up of the So.) have such prems. returned in full."

It was now contended that the pol.-holders who had paid their prems. to the Co. ought to have good faith kept with them: for they had relied upon a distinct promise of the Court that they should be paid back in full. Besides, V. C. James had laid it down in *Cook's case* [*Albert* liq., 1870, previous to arbitration], that a claim in respect of a pol. was not affected by the non-payment of the prem. which accrued due after the presentation of the petition, and before the order to wind up.

Lord Westbury said that the several orders of the V. C. Malins had been productive of great difficulty and great expense, and could only be accounted for on the supposition that great uncertainty of purpose existed in the mind of the Court as to the time of making the valuation of a pol. He intimated his intention of adopting the method of valuation laid down in the Life Assu. Cos. [Amendment] Act, 1872, which is the same as that laid down by Lord Cairns in *Lancaster's case* in the *Albert* arbitration; and differs from the method laid down by Lord Romilly in *Holditch's case*, 1870, in winding up the *English* Ins. Co., or that of V. C. James in *Bell's case*, 1870, in the winding-up of the *Albert* (before the arbitration) [or from that of V.C. Malins in *Warner's case*, 1870, in the winding-up of the *International* Life].

The question of *Premiums* was viewed also in connexion with proof. [PREMIUMS.]

Regarding *Annuities*, in *Sullivan's case* and in *Smythe's case* [Nov. 1872] the question was considered of the date as at which the valuation of an annu. was to be made, and Lord Westbury held, as he had previously indicated, that the date was to be the date of the order to wind up the Co. Another question was as to the instalments of an annu. which became payable before the presentation of the petition to wind up, but were not paid. It was estab. that the annuity-contract holder might prove for such instalments, together with int. thereon from the day of payment down to the presentation of the petition to wind up. With regard to the annu. on which instalments became due after the presentation of the petition to wind up, but before the winding-up order, and were not paid, the annuity-contract holder is entitled to prove for such instalments, but without any interest thereon. Where sums under £50 had been paid by the So. to the contract-holder between the presentation of the petition to wind up and the winding-up order, in accordance with V. C. Malins's order, then that money was to be retained by the contract-holder, and credit is to be given for it as against the instalments of annu. that became due before the date of the winding-up order.

Set-off [LORD WESTBURY].—In *Gloag's case* [Feb. 1873] it was held that where a pol.-holder had borrowed money from the Co., and had deposited his pol. with the Co. as security for the loan, and had signed a memorandum charging his pol. with the repayment, on the Co. being wound up, the liquidator is entitled to sue at once for the sum advanced, and the pol.-holder is not entitled to set-off against that sum the amount at which the pol. may be estimated in the proof.

Shares [LORD WESTBURY].—Various questions have arisen in the course of the liq. regarding the validity of the *Transfers of Shares*. It will be convenient here to state what the requirements of the D. of Sett. of the Co. in this respect were. The Deed contained a provision whereby a shareholder might submit for the directors' approval the name of a proposed transferee of his shares; and if the proposed transferee should be approved of, or if the directors should not within 14 days propose some other person to take the shares at the market price (in which case the person so proposed should be considered as approved of by them), then the shareholder might, according to a form to be sanctioned by the directors, transfer his shares to his own proposed transferee, who thereupon might, upon executing the D. of Sett., or a covenant to abide by the provisions of the Deed, be entitled to call upon the directors to place his name on the regis. of shareholders as the proprietor of such shares; with a proviso that no shares should be trans. until all instalments or calls actually due and payable in respect thereof had been paid. And there was a further provision that no share should be trans. to any person who had not been first approved of or considered as approved of by the directors; and that if any trans. should be made or attempted to be made to any person who had not been so first approved of, such trans. should be void.

In *Read's case* [Oct. 1872], where there were arrears of calls at time of proposed trans., the original holder was retained on the list. Lord Westbury said: "In such a transaction, the whole equity of the shareholder depends on his being able to show that he had completed, duly and regularly, a legal trans. of his shares before the presentation of a successful petition to wind up."

In *Lloyd's case* [Oct. 1872] the directors of the So. had disapproved of the proposed transferee; and this disapproval Lord Westbury held to be warranted.

In *Marshall's case* [Oct. 1872] it was held, that in case of an application to remove a transferee's name from the regis., both the transferor and transferee must be before the Court, in view of being bound by order made. In *Thomas Brown's case* [Feb. 1873] the ruling was the same.

In *Simpson's case* [Feb. 1873] the trans. was set aside on the ground of misrepresentation as to the occupation of the transferee. In *Paterson's case* the same. In *Williams's case* the mis-description of the transferee was not of such a character as to annul the trans. In *Walton Williams's case* [June, 1873] there had been a mis-statement of consideration.

In *Gammon's case* [Jan. 1873] the executors of a former proprietor, who had executed a trans. of the shares to the "Co. or its nominees," were put upon the list of contributories on the ground that the final contract had never been completed, and their names remained on the regis. at date of winding-up.

In *Bentick's case* [Feb. 1873] the question of an incomplete transfer arose. But as the case of incompletion arose with the directors, and not with the transferor, the transferee's name was ordered to be substituted on the regis. Calls due to be first paid.

In *Manisty's case* [Feb. 1873] it was held that the forfeiture of shares for non-payment of calls would not, under certain circumstances, prevent a person from being placed on the list of contributories.

In *John Murgatroyd's case* [Feb. 1873] it was held that husband's and wife's names must be put on the list of contributories conjointly in respect of shares held by the wife before marriage.

In *Scarisbrick's case* [same date], where a married woman had purchased shares without the approval, consent, or knowledge of her husband, in the winding-up of the Co., an application by her to remove her name from the list of contributories—to which her husband was no party—was refused.

The following embody some special features:

In *Lloyd's case* [Oct. 1872] the facts were as follow: Mr. Lloyd had held shares in the *European* Co., and the question was now pending as to whether he was still liable on those shares, notwithstanding a trans. to a Mr. Jackson. The Co. alleged that the trans. was a collusive one, and that certain forms required by the Co. had not been complied with.

The applicant now stated that if the proceedings which had been commenced in Chancery, but had been put an end to by the Arbitration Act, had continued in Chancery, he would have been entitled to full information by means of specific answers to his interrogatories; but as it was, he could not get sufficient information from the official liq. as to the practice of the office. He wished therefore the Arbitrator to intimate in what way he was to proceed. The question turned on technical points, and it was necessary that the applicant should be well acquainted with the procedure of the office. It was suggested that inasmuch as a "case" could not be agreed on, each side should prepare its own "case," and that the Arbitrator should give his decision on the statements made in those cases.

Lord Westbury assented to this, and gave directions that in the "cases" the issues should be stated specifically, and that the applicant should receive every possible assistance from the official liq. If it should turn out that the question ought not to be tried until better evidence had been procured, it should not be tried until such further evidence be taken.

In connexion with the technicalities which were sought to be set up by those in charge of the cases which came before the Court, Lord Westbury thus expressed himself in *Coghlan's case*, heard 1st Nov. 1872:

> Nothing to my mind is more unjust, more discreditable, than conduct of that description. See what technicalities will have recourse to. I am convinced it was the consideration of all these technical rules being applied to a matter of this kind, where the Judge was under an obligation to find the new contract was voluntarily entered into with a perfect knowledge of the case—I say I am confident that these technical modes of viewing these matters, which have been too numerous, have led to the necessity in the mind of the Legislature of laying down a rule that should save men from having things imputed to them which were directly contrary to their intention and to the just meaning of their acts by requiring what on various occasions the law has found it necessary to require—namely, some writing, declaring the mind and intention of the party. That was embodied in two or three cases, and it became necessary to prevent the rights of men being defeated by innocent or equivocal acts being tortured into evidence of intentions and conclusions directly opposite to what they themselves held and what they intended to act upon.

In *Cathie's case* [Oct. 1872] it was held that shareholders might deduct from their unpaid calls the amount of the two bonuses, of 6*d*. p. share in 1863, and 1*s*. p. share in 1867.

In *Michael Brown's case* [Oct. 1872] the official liq. claimed, notwithstanding the bankruptcy of the shareholder, and the disclaimer of the trustee, under the 23rd sec. of the Bankruptcy Act, 1869, and the proof of the Co. in respect of liability as to share cap., that the shareholder was liable to be placed on the list of contributories in respect of the costs of winding up the Co. Lord Westbury held that there was no ground for placing him on the list.

In *Davies's case* [Feb. 1873], where the bankrupt's name still remained on the list of contributories, after composition received by the Co., *held*, that his name must remain as a contributory to the costs of winding-up.

In *Gunn's case* [April, 1873] an executrix was put on the list in her own right, having been so treated by the Co., and not in her representative capacity.

In *Doman's* and *Sullivan's* cases [June, 1873] an attempt was made by the official liq. to place two shareholders in *European* Co. No. 1 upon the list of contributories of *European* No. 2, on the ground that some technicalities which alone could be performed by the officials of the Co. No. 2 had not been performed. Lord Westbury declined to make any such order, which would have amounted to an act of repudiation; but ordered the arrangement as orig. understood to be regarded as completed. See *European* Co. No. 1. [Lord Romilly has since modified this judgment.]

Subsidiary Co. Winding-up [LORD WESTBURY].—In *Gardiner's case* [Jan. 1873] the Arbitrator held that the order to wind up a subsidiary co. was not to be made from the date of the order to wind up the principal co., but from the actual date of the order to wind up the subsidiary co.

In all the preceding there breathes the spirit of true equity, guided and directed by a master-mind. Alas for the true interests of all concerned, Lord Westbury, after a brief illness, died in July, 1873 [aged 73], and another has been appointed to reign in his stead! Mr. Montague Cookson, of the Chancery bar, in a letter to the *Times*, said: "No one who habitually practised before him while he presided over the late sittings in Victoria Street [*European* arbitration] is likely to forget how that masterly intellect penetrated as by instinct into the marrow of the difficult questions presented to it, and extricated principles from labyrinths of facts that might well have confused a less vigorous brain."

The Lord Chancellor, under the powers of the Arbitration Act, appointed Lord Romilly to continue the work of the arbitration. He commenced his sittings on 27th Oct. 1873. We propose briefly to note the subsequent decisions. The reader will soon perceive that expediency rather than high principle has since become the order of things.

Claims [LORD ROMILLY].—In *Brown and Tylden's case* [May, 1874] the facts were as follow: Proof of death was sent to the Co. on 8 March, 1871. The claim was admitted by Co. on 11th April, and it was then arranged that claim should be paid on 16th June—it being a provision of the pol. that the claim should be paid within 3 months after satisfactory proof of death. On the 10th June a petition was presented to wind up the Co. On the 22 June the pol.-holder's solicitor applied for payment of the money, and threatened to take proceedings if it were not paid. On the 8 July the claim was paid by a cheque dated 20 June. It was admitted that the pol.-holder's sol. knew of the petition. On the 12th Jan. 1872, an order was made to wind up the Co. Lord Romilly held that the money must be repaid to the Co.; the payment having been a fraudulent payment of a creditor after the commencement of the winding-up under the Cos. Act, 1862.

Concurrent Proof [LORD ROMILLY].—In *Line's* and *Leah's cases*, and in *Deas's case* [May, 1874], Lord Romilly has stated his views. These cases were on all fours with *Harman's* and *Pratt's cases*, determined by Lord Westbury, except that the indemnity only extended through two cos. Lord Romilly *held*, that the pol.-holders must not prove against the transferee Co. individually, but that an official liq. of the transferee Co. must bring in one proof in respect of all its liabilities against the transferor Co. under the indemnity covenant. Whatever might be the rights of the individual pol.-holders, *this was held to be the most convenient course*, and Lord Romilly, under his extensive powers, ordered it to be adopted.

Indemnity [LORD ROMILLY].—In the *Anglo-Australian Indemnity case* [Dec. 1873, and Jan. 1874] the facts were these. In 1858 the *Anglo-Australian* trans. its bus. to the *British Provident*. The D. of Sett. of the *B. P.* contained a provision that there should be inserted in every pol. or other assu. a provision that the cap. alone should be liable on the pol. The Amalg. D. between the two Cos. contained an agreement by the *B. P.* to indemnify the *A. A.* Co. in respect of all engagements. It was now contended, on the winding up of the *B. P.*, that the liability to indemnify the *A. A.* in respect of the pol. granted by the *A. A.* Co. was limited to the cap. of the *B. P.* Co. Lord Romilly held that there was no limitation whatever to the liability;—thus utterly disregarding the decision of Lord Westbury in *Wallberg's case*, already fully stated.

Novation [LORD ROMILLY].—Without travelling over the several cases, which are numerous and which will be severally considered under NOVATION, we may say that in the main Lord Romilly has proceeded on an entirely opposite principle to Lord Westbury; and unless there is proof in some tangible form that a pol.-holder has not novated, he is assumed to have done so.

In *Harman's* and *Pratt's cases*, which his Lordship had ordered to be re-heard [see

CURRENT PROOF under Lord Westbury's decisions], and which came on for re-hearing 28 Oct. 1874, the counsel for the liq. contended that Lord Westbury had taken an erroneous view of the law; and that the *British Provident* Asso. and the *Anglo-Australian* Co. were free from liability, inasmuch as there had been a novation with the *British Nation* Co. The counsel for Harman and Pratt contended that there had been no novation. Moreover, they also urged that the matter being a *res judicata*, it would be contrary to all precedent for a Judge to alter a decision after the order had been drawn up; that it would be most disastrous if each successive Arbitrator who is dissatisfied with his predecessor's decisions were to reverse them.

Lord Romilly said that no person had a greater respect for Lord Westbury than he had, and nothing would induce him to reverse one of his decisions where there was any doubt. But his Lordship was bound by the Arbitration Act to give his decision to the best of his judgment. He had looked at the case as if it had been his own judgment, and as if, on considering subsequent cases, he had concluded he had come to a wrong conclusion. He had endeavoured to put Lord Westbury out of sight altogether. The question was, what was he (Lord Romilly) to do, supposing he had himself made a mistake? He must do his best to rectify it, and the Act gave him power to do so. In his opinion there had clearly been novation in these cases. He was strongly disposed to follow Lord Westbury in these cases, if he could; but he could not. In any other cases he should require a great deal to induce him to re-hear them.

A declaration was made that there was no claim against the *Anglo-Australian* and *British Provident* Cos. Leave was, however, given to mention *Harman's case* again, if his advisers thought that, under the peculiar circumstances of his case, there was some claim against the *British Provident* So.

The latest intimation is from the *Times* reporter's head-note on the hearing 18 Nov. 1874: "Lord Romilly continues to carry out his principles on the subject of novation. The more he examines the subject, the more confirmed he is in the correctness of his decisions." This was, we believe, the last time his Lordship sat in the matters of the arbitration.

Shares [LORD ROMILLY].—In *D'Ouseley's case* [Oct. and Nov. 1873] Lord Romilly held, that where a legacy was bequeathed to a married woman, and her husband consented to her receiving it, and employing it as she thought fit, and with a portion of the money she purchased shares in the *European* No. 2, in her own name and as her separate estate, the purchase being effected through an agent of the Co. to whom she was known as a married woman, and she subsequently received the dividends, and the husband never dealt with the shares in any way, he was nevertheless liable to be placed on the list of contributories in respect of the shares in the winding-up of the Co.

In *Musket's case* [Oct. and Nov. 1873], where transferee had not received consideration, trans. set aside. In *Dymock's case* the same. In *Phillips's case* [Oct. 1873, and Feb. 1874] the same.

In *Wm. Hen. Bentick's case* [Oct. 1873], where an infant purchased shares in the Co., the fact of his being an infant being unknown to the Co., and the order to wind up was made before he came of age, but when he came of age he repudiated the shares:—*Held*, that he ought not to be put on the list in respect of the shares; but that he must repay to the Co. all the dividends he had received.

In *Joshua Murgatroyd's case* [Oct. 1873] Lord Romilly held, that the Co. being a common law partnership, and the shares transferable on the proposed transferee being approved by the directors, *if a shareholder trans. his shares to a person who he knows is unable to discharge the obligations of a shareholder*, the transferor will not be sheltered by the fact that the directors neglected to inquire, and were satisfied with the transferee; and the trans. was set aside; and the transferor's name placed on the list of contributories.

In *Doman's case* No. 2 [May, 1874] Lord Romilly held that Mr. Doman was not liable to contribute to the payment of creditors of *European* Co. No. 1 in respect of pol. (thus confirming Lord Westbury so far); but he might be liable to creditors in respect of the general debts.

In *Blackburn's case* [May, 1874], where a compromise had been made with the Co. by the holder of 4450 shares, by the payment of a former call of 5*s*. p. share, having stated his circumstances to the Co. fully; this was held to be a good compromise against all further liability, and one within the powers of the Deed.

The conflict which has arisen between the decisions of No. 1 and No. 2 Arbitrator on several questions of vital importance has caused much comment in legal circles. In *Webber's case* [Aug. 1874] Lord Romilly said that when he succeeded to the duties of the arbitration, he had determined to adhere to the principles laid down by his predecessor; *but he had since arrived at the conclusion that where contradictory decisions had been given, it was his duty to reconcile them as far as he could.* In this attempt he has brought an odium upon Arbitration Courts, such as they will hardly ever recover from.

In May, 1873, a case came before Mr. Registrar Pepys, sitting as Chief Judge in Bankruptcy, in which a conflict of jurisdiction arose. This was in *Re Bennett.* Mr. Bennett was a contributory of the *European* So. and the *British Nation* L. Assu. Asso., the latter being one of the amalg. cos., and the question now raised was whether, having regard to the powers by the European Assurance So. Arbitration Act, 1872, conferred on the Arbitrator, the Court of Bankruptcy had any power to interfere with his jurisdiction. By sec. 9 the jurisdiction of the Arbitrator was defined, and by sec. 21 it was provided that "all awards, orders, certificates, or other instruments made by or proceeding from the Arbitrator shall be binding and conclusive on all parties and persons to all intents and purposes whatsoever, and shall not be removed or removable by *certiorari* or by other writ or process into any of Her Majesty's Courts of Law or Equity, and the proceedings or acts of the Arbitrator shall not be liable to be interfered with by any Court of Law or Equity by way of *mandamus*, prohibition, injunction, or otherwise." It appeared that on the 21st of April Mr. Bennett received an intimation that an order had been made by Lord Westbury to levy on his goods for £236 12*s.* 6*d.*, with int. and costs, and three or four days afterwards he filed a petition for liq., under which a receiver was appointed, and an interim injunction granted restraining proceedings on the order. After hearing the arguments of counsel, his Honour said the injunction must be continued. The official liq. had no higher right than any other creditor, and the Arbitrator, having made the order, was *functus officio*. The Legislature could never have intended that one creditor should sweep off the whole of a debtor's property to the exclusion of his other creditors, and it was idle to suppose that the Law of Bankruptcy was superseded by the European Assu. So. Arbitration Act, 1872. Injunction continued until after the first meeting. Whether the case has been finally disposed of we do not know.

In 1873 there was passed a special Act—36 & 37 Vict. c. ix.—*An Act for Making Provision for Administration of the Reserved Fund of the European Assu. So.; and for other purposes.* The Act recites the Arbitration Act, 1872, and proceeds *(inter alia)*:

> And whereas a portion of the assets of the *European* So. was set apart to constitute the reserved fund directed by the last-mentioned Act to be created (in this Act called the reserved fund), and the same at the passing of this Act consists of, etc. . . . .
>
> And whereas difficulties have arisen in the conduct of the arbitration under the Arbitration Act, in consequence of the existence in sec. 7 of that Act of the proviso, that nothing therein contained shall affect the reserved fund and the application thereof, and it would be highly beneficial, as well to all public departments and persons interested in the reserved fund, as also to the persons and bodies interested in the arbitration generally, if the restriction contained in that proviso were removed, and the arbitrator were empowered to administer the reserved fund in accordance with the provisions of the Act under and by which it is estab. and regulated. . . .
>
> And whereas since the passing of the Arbitration Act it has been discovered that five cos. which ought to have been included in the schedule to that Act are omitted therefrom. [These omitted cos. are included in our list already given, and their omission has been already referred to.] . . .
>
> And whereas, to preclude questions that might arise by reason of its being discovered in the further course of the arbitration that other cos. also which ought to have been included in the schedule to the Arbitration Act have been omitted therefrom, it is expedient that a more extensive meaning be given to the expression, the absorbed cos., in the Arbitration Act.

These objects could not be attained without the authority of Parl. It is then enacted to the following effect. 1. That the short title of this Act be "The European Assu. So. Arbitration Act, 1873," and that it may be cited together with the Act of 1872. 2. Gives jurisdiction to Arbitrator over reserved fund. 3. Provision for immediate application of fund to payment of claims under guar. pol.; and for readjusting the burdens of the different funds of the *European* amongst one another. 4. Awards to be binding as regards the fund. 5. The Act to be extended to the newly-scheduled asso. 6. "Every co., asso., so., or partnership (whether legally constituted a co. or not), by or on behalf of which at any time any agreement or arrangement has been made and acted on for amalg. or union with or absorption into any of the cos. named in the schedule to the Arbitration Act, shall be deemed to be one of the absorbed cos. within the Act." 7. Expenses of Act to be paid as Arbitrator should direct.

There was also introduced during the same session another Bill—known as the "European Assu. So. Bill, No. 1"—which was intended to provide for the repayment of renewal prems. paid to the credit of that account under the order of V. C. Malins; and to give power to appeal from the decisions of the Arbitrator. This was thrown out on the ground of non-compliance with the standing orders.

On the 30th April, 1874, a dividend of 2*s.* in the £ was declared in favour of the pol.-holders in the *European* No. 2.

In Dec. 1874, notice was given by the liq. to persons claiming to be creditors in the following asso. viz.:—The *Age; Accumulative; Anglo-Australian*, etc.; *Catholic Law; Commercial; Engineers and Masonic; English and Cambrian; Equitable Provident; Householders; Lond. Equitable Mut.; Lond. and Provincial Prov.; Magnet; United Guar. and Life;* and *United Service and Gen.*, to send in particulars of their claims on or before the 31st Dec. 1874. The adjudications being appointed for the 8th Jan. 1875.

Persons claiming to be creditors of the *Athenæum* Life; *British Nation* Fire; *General Indemnity; Life Assurance Treasury; National Assu. and Investment: Professional* Life; and the *Tontine* Life, were also required to send in particulars by the same date. The adjudication on this second batch was fixed for the same day; and it was notified that application will shortly thereafter be made to the Arbitrator for the absolute dissolution of the cos. included therein.

The former list contains 14 asso.; the second 7; making 21 out of the 45 scheduled.

Since the preceding account of the winding-up was written, Lord Romilly has died, viz. on the 23rd Dec. 1874, aged 72. He was about to resume his sittings, when a short illness carried him off.

The legal profession at once looked to Lord Selborne as prob. the only man capable of solving the entanglement into which the arbitration has fallen. But his Lordship was either unable or unwilling to accept the position.

It is now announced [Jan. 1875] that Lord Justice James has been appointed Arbitrator; but that he will not at present enter upon the "litigating part of the work," but will merely carry on the administrative portion until an application has been made to Parl. to reconstitute the arbitration, with a view to allowing appeals from the Arbitrator.

We do not know what may be the next misfortune which awaits the unfortunate share- and pol.-holders in the *European* and associated Cos.

EVANS, DAVID, District Man. of South Wales branch of the *Gt. Brit.* since 1868. He held a similar position in the *Lond. Mut.* from 1851 to 1856. From 1857 to 1865 he represented the *Brit. Equitable.* In 1865 he represented the *Queen*, and continued with that office down to 1868. In 1858 he pub. *Letters to Agents of the Lond. Mut. Life and Guar. So., in Wales, Cheshire, Lancashire, Yorkshire, Nottingham, and Derby*, regarding the amalg. of that asso. with the *Eagle.* Mr. Evans is an earnest practical worker in the field of Ins.

EVANS, D. MORIER, late City Editor of the *Standard* newspaper. He pub. in 1859 : *Facts, Failures, and Frauds;* in which is given an account of Walter Watts, and his frauds upon the *Globe.* He was also the author of several other works of a useful and practical nature.

EVANS, JOHN, was one of the founders of the *United Kingdom Cattle*, and became its Sec. in 1847. He soon afterwards retired.

EVANS, MARKHAM R., was Man. of *Planet* [afterwards *Citizen*] from its formation in 1866 down to its amalg. in 1874. He formerly held a position in the Lond. office of the *North Brit. and Mercantile.* He has now retired from Ins. bus.

EVANS, MAURICE, was Sec. of *Phœnix Life* from 1857 down to its amalg. 1860.

EVANS, W. D., Barrister-at-Law, published in Liverpool in 1802: *Essays on the Action for Money had and received ; on the Law of Insurances ; and on the Law of Bills of Exchange and Promissory Notes.* A very poor production.

EVASION.—The act of escaping by means of artifice ; a trick or subterfuge.

In *Wainwright* v. *Bland*, Exchequer, 1836, it was held, that for a person without interest to effect an ins. on the life of another, in the name of that other, was an evasion of the stat. [1 Mees. and W. 32.]

EVE, CHARLES, became Sec. of *Lond. Assu.* Corp. in 1764, and occupied that position down to 1765.

EVEN KEEL.—A ship is said to be on an even keel when she draws the same water abaft as forward.

EVENS, JOHN HARRY, Man. Director of *Imperial Union*, of which he was understood to be the founder. He has had an extended experience. He was Sec. of *Commonwealth* in 1853. He afterwards held office in the *Wellington*, in the *Prudential*, and in the *Kent Mut.* From 1862 to 1864 he was Man. of the *City* Life. In 1866 he became Sec. of *Imperial Union.* Mr. Evens has a wide connexion, and does not limit his energies entirely to Ins. enterprise.

EVEREST, REV. ROBERT, Chaplain to the East India Co., contributed to the *Statistical Journ.* 1843, a short paper, *On the Famines that have devastated India, and on the Prob. of their being Periodical.* [FAMINES.] [INDIA.]

EVERETT, E., was promoter, and afterwards Sec. of the *General Provincial*, founded at Nottingham in 1864; and remained in that position down to the amalg. of the office in 1867.

EVIDENCE.—Proof either written or unwritten, of allegations in issue between parties. It may be useful to give a few of the leading rules of evidence—there are many others. The point in issue is to be proved by the party who asserts the affirmative. It will be sufficient to prove the substance of the issue. The best evidence must be given of which the nature of the thing is capable. The exceptions to this rule are—1. Where it is necessary to prove an entry in a public book, the original need not be shown : but from a principle of general convenience, an examined copy will be admitted. 2. In the case of all peace officers, justices of the peace, constables, etc., it is sufficient to prove that they acted in these characters, without producing their appointments. 3. An admission of a fact by a party to a suit, has, in many cases, been considered sufficient to dispense with strict and regular proof, which would otherwise have been necessary. Hearsay evidence of a fact is not admissible. Evidence is divided into direct and circumstantial. The rules of evidence, are the same in civil as in criminal courts—for a fact must be estab. by the same evidence whether it is to be followed by a civil or a criminal consequence.

The preceding relates more particularly to the legal character of evidence. In the practice of ins. various questions regarding evidence arise, varying with the nature of the bus. These we propose briefly to notice.

Where the conditions of a pol. stipulate for such evidence or proof in support of a claim, as shall be satisfactory to the directors of the Co., this does not mean such evidence or proof as caprice may require: satisfactory here means sufficient, or such as would satisfy reasonable men. This was laid down in *Braunstein* v. *Accidental Death Co.* 1861. [1 Best and S. 782.]

Where a jury find a verdict against the weight of evidence, a new trial may be applied for on that ground.

It is a rule of evidence that extrinsic proof ought not to be admitted to vary a written instrument: but it *may be admitted* to show that there has been *mistake*, *fraud*, *misrepresentation*, and *deceit*. For example, it may be shown that a pol. of ins. was not reduced to writing conformably with the real intention of the parties; and in such a case a Court of Equity will reform the contract. In this the contract of ins. is like other contracts; it is liable to be reformed on account of accident or mistake, and set aside for fraud. So a latent ambiguity may be explained by extrinsic testimony: and likewise terms of art, commerce, and trade.

Parol evidence, then, may be received, not to vary the contract, but to explain the true meaning of the pol., in the following cases:

1. Relating to *mercantile usage*, so as to ascertain the sense and understanding of the parties by their contracts, which are made *with reference to such usage or custom*, which usage or custom then becomes a part of the contract, and may not improperly be considered the *law* of the contract. "Such proof (says Justice Story) is always to be admitted with cautious reluctance, and to be watched with scrupulous jealousy."

2. To fix the application of *general* or *indeterminate words*; showing the words to be interpreted to have been used by the parties in a *distinct and peculiar sense*, as when particular words may, with equal propriety, be understood in *two different senses*, and the context fails to determine which ought to be adopted. In such cases the evidence is merely explanatory.

3. Relating to the representations of the insured, and to correct *errors of description*, by showing the identity of the subject to which it relates.

4. To remove *latent ambiguity*, and enable the Court to understand and enforce the contract.

5. As to the *extent of the interest* of the insured, if it does not contradict the terms of the pol. itself.

6. To explain *technical terms*, or words peculiar to some trade or bus.—terms of art, science, mechanics, and the like.

These points may be further exemplified by a few cases, illustrating the practice in some of the leading branches of Ins. bus.

Fire Ins.—In case of disputed claims, it is not unusual to seek the aid of skilled witnesses, such as architects, surveyors, engineers, and others practically conversant with the bus. of the construction, and also with the adjustment of losses, or with the particular risk in respect of which the dispute has arisen; and their evidence may be admitted either for or against the claim, in view of enabling the jury to come to a correct decision on the facts, or regarding the value of the property destroyed. Scientific evidence may also be called as to whether an alteration of premises had or had not materially increased the risk.

In *Thurtell* v. *Beaumont*, 1823, where in an action on a pol. of fire ins., the defence was that the insured himself set fire to the premises, the Judge instructed the jury that the proof in support of such defence must be as strong and full as would be required to convict the insured if on trial for arson. On appeal this instruction was upheld; as it has also been in subsequent cases.

In *Friedlander* v. *Lond. Assu. Corp.* 1832, upon an issue whether plaintiff was interested in goods destroyed by fire, and a witness called by the plaintiff stated that invoices of the goods and letters of advice, purporting to be written by him at Edinburgh, were fabricated in Lond. after the fire, by plaintiff's direction:—*Held*, that it was competent for plaintiff to call other witnesses to disprove the alleged fabrication, and show the genuineness of the documents.

In *Harris* v. *Protection* Ins. Co. 1834, evidence having been given to show that the plaintiff, after leaving Ohio, had a quantity of valuable merchandize in Kentucky, the defendant produced the records of the Insolvent Commissioner to show that the plaintiff applied for and obtained a discharge under the insolvent law after the fire:—*Held*, that this evidence was admissible, to show a state of things inconsistent with his situation in Kentucky, from whence to infer the fraud of the plaintiff. [Wright, Ohio, 548.]

In *Stacey* v. *Franklin* F. Ins. Co. 1841, the facts were as follow. A first ins. was upon "merchandize generally, including liquors and groceries contained in Store No. 37, South Wharves, for the use of whom it may concern, say merchandize without exception." A second pol. was made in another office "on coffee and other merchandize without exception, either on board the J.S. in this port, or in the brick store No. 37, South Wharves, in the city of Philadelphia." A loss by fire happened on the goods in store, not brought in the J.S. or landed therefrom:—*Held*, 1st, that facts and circumstances outside the instrument were admissible to show the intention of the parties as to the second pol. being a specific ins. on other goods not covered by the first; and, 2nd, that as thus explained, there was not necessarily a double ins.; but the first might be on goods generally, in the store, and the second on specific goods merely, brought in the J.S. or landed therefrom. [Watts and Serg. Pa. 506.]

In *Franklin* F. Ins. Co. v. *Hamill*, 1847, it was held that any evidence conducing to show that damage consequent upon the fire was less than that claimed, would be admissible, but the doctrine relative to mitigation of damages has no application. [6 Gill, Md. 87.]

In *Howard* v. *City* F. Ins. Co. 1847, in an action under the pol. of ins. where the question of the value was in issue, the defendant was permitted to ask a witness who was clerk in an adjoining store of about the same size, with a like stock, what was the amount of stock in the adjoining store, according to an inventory which had been taken, and the relative amount of goods in each store, according to their appearance, with a view to prove that the plaintiff's store contained a smaller amount of stock than had been represented by his witnesses. [4 Denio, N.Y. 502.]

In *Richards* v. *Protection* Ins. Co. 1840, it was *held*, that if conditions annexed to pol. represent one class of buildings or property as more hazardous than another, it is not competent to show that they are not so in fact. [30 Me. 273.]

In *Kennedy* v. *St. Lawrence* County Mut. Ins. Co. 1851, it was *held*, that evidence that the agent of the insurers drew up the application, and knew of the existence of buildings omitted to be mentioned in such application, as standing within ted rods of the property to be insured, is admissible. [10 Barb. N.Y. 285.]

In *Case* v. *Hartford* Ins. Co. 1852, it was *held*, that invoices, books of accounts, sales, and inventories of stock taken immediately after a fire, and the testimony of the clerks of the insured, are proper evidence of loss by removal of goods when endangered by fire. [13 Ill. 676.]

In *Cushman* v. *North Western* Ins. Co. 1852, it was *held*, that it is not competent for the underwriter to introduce evidence to show that the actual value of the property ins. is less than the amount stated *in a valued pol.*, except for the purpose of showing fraud in the insured. [34 Me. 487.]

In *Fogg* v. *Middlesex* Mut. Ins. Co. 1852, the pol. in controversy was on a stock of goods. At the time this pol. was made, another pol. in favour of the same party was made on the building in which the stock was kept :—*Held*, that a copy of this last pol. with the indorsements thereon, the orig. being lost, was admissible in evidence, if it had any bearing upon the other, and its weight was for the judgment of the jury. [10 Cush. Mass. 337.]

In *Schenck* v. *Mercer* Mutual Ins. Co. 1853, it was held not to be error to ask a witness, who was an experienced and practical fireman, whether in his opinion risk of fire was increased by certain alterations in a building: for such a purpose he is an expert. [4 Zabr. N. J. 447.]

In *Hartford Protection* Ins. Co. v. *Harmer*, 1853, it was *held*, that opinions are only admissible where the nature of the inquiry involves a question of science or art, or of professional or mechanical skill, and then only from witnesses skilled in the particular bus. to which this question relates. [2 Ohio St. (22 Ohio) 452.]

In *Hersey* v. *Merrimack* Mutual F. Ins. Co. 1853, it was *held*, that an offer to sell, is evidence, at least, against the person offering, that the property was not worth more, [7 Foot, N. H. 149.]

In *Wall* v. *East River* Ins. Co. 1854, it was *held*, that where a building ins. is described in the pol. as "occupied as a storehouse," it is a warranty that the building is occupied as a storehouse only. The ordinary signification of the word "storehouse" cannot be changed by evidence of a usage in a different sense, reaching back but a few weeks, nor by evidence that all parties to the pol. knew the building was not exclusively occupied for storing. It cannot be inferred from such evidence that the word was used in a different sense from the ordin. meaning. [3 Duer, 264.]

In *Kelly* v. *Troy* F. Ins. Co. 1854, it was *held*, that if in drawing up an application, the agent act as the agent of the Co., and neglect to incorp. in it facts which were essential to the validity of the pol., when he had promised the applicant so to do, the Co. would be estopped to set up the omission, for the purpose of defeating an action brought on the pol. [3 Wis. 254.]

In *Merchants and Man.* Mut. Ins. Co. v. *Washington* Mut. Ins. Co. 1855, it was *held* that underwriters will not be permitted to express their opinions as to the nature of a risk, whether it is more or less hazardous. Like other witnesses, they can only testify to facts. They do not come within the rule that experts may testify in particular cases, and that permits men of professional science to give their opinion upon subjects connected with the arts. [1 Hand, Ohio, 408.]

In *Haskins* v. *Hamilton* Mut. Ins. Co. 1855, it was *held*, that in a suit on a policy on machinery, the testimony of one who had owned it, and sold it to the plaintiff, who was familiar with such machinery, having had it repaired, estimates made for other machinery of a similar kind, etc., is admissible on a question as to the value of the machinery destroyed. [5 Gray, Mass. 432.]

In *Liberty Hall* Asso. v. *Housatonic* Mut. F. Ins. Co. 1856, where an application for ins. was dated August 1, 1854, and it therein appeared that the ins. was for 5 years; the amount of the prem. paid and deposit note was sufficiently large to cover an ins. for that term; and on the back of the pol. was stated that the pol. expired August 1, 1859; but in the body of the pol. it was expressed to be from 1st of August, 1854, to August 1, 1854:—*Held*, that other parts of the contract were admissible in evidence to correct what was evidently a clerical error. [7 Gray, Mass. 261.]

In *Harper* v. *City* Ins. Co. 1857, it was *held*, that in an action on a pol. of ins. against fire on "books, type, plates, etc., with the privilege of printing and book-binding," one condition of which excepted "any loss occasioned by the use of camphene," evidence of a usage in a similar printing estab. of camphene for the purpose of cleaning types and rollers is admissible. [1 Bosw. N.Y. 520.]

In *Cumberland Valley* Mut. Protection Co. v. *Schell*, 1857, it was *held*, that when the value of property at the time of fire is put in issue by the pleadings, evidence of such value is relevant at the trial; nor is evidence of the rent of the building too remotely circumstantial. [29 Penn. St. 31.]

In *Atlantic* Ins. Co. v. *Goodall*, 1857, it was *held*, that evidence tending to show that a pol. was to take effect at some other time than at its date, is not liable to objection as varying a written contract, and is admissible. [35 N.H. 328.]

In *Atlantic* F. Ins. Co. v. *Sanders*, 1858, it was *held*, that where a policy is produced, to which printed by-laws are attached, and they are referred to in the pol., and made a part of it, the same evidence which proves the pol. proves the by-laws. [36 N.H. 252.]

In the *Mayor*, etc., of N.Y. v. *Exchange* F. Ins. Co. 1862, where a building was orig. constructed and several times used for the purpose of an exhibition of industry or fair, and the defendants, knowing its use, had several times ins. its owners in respect of it:—*Held*, that in an action upon the pol. issued to the plaintiffs, evidence of the former ins. was admissible as tending to show, in connexion with other facts, that the defendants were aware of the general purposes for which the building was used, and designed to assume a risk of the same character. [9 Bosw. N. Y. 425.]

In *Baptist Church* v. *Brooklyn* F. Ins. Co. 1863, it was *held*, that a witness in an action on a pol. of ins. cannot be allowed to testify what is meant by a "permanent pol."; it not appearing to be a term of art, or one employed in any particular bus. [28 N. Y. 153.]

In *Audubon* v. *Excelsior* Ins. Co. 1863, it was *held*, that in determining the question whether an insurer positively undertook to ins., or stated that he would see about it, the jury are authorized to consider the prob. of the applicants being satisfied with the latter answer. [27 N. Y. 216.]

In *Wood* v. *Poughkeepsie* Mut. Ins. Co. 1865, it was *held*, that evidence that the agent of an ins. co. frequently waived the conditions of its pol. requiring prepayment of prems., is not admissible to raise an inference of waiver in a particular case in the absence of other proof tending to estab. such waiver. [32 N. Y. 619.]

In *Citizens* Ins. Co. v. *McLaughlin*, 1866, it was *held*, that a witness familiar with the mode of using benzole in patent leather factories in a particular place, may be permitted to testify as to such use: as pertinent to the question whether the plaintiff's use of that article in his own factory had been according to the customary mode in such factories. [53 Penn. St. 485.]

In *People's* Ins. Co. v. *Spencer*, 1866, it was *held*, that in an action for loss by fire of a brewery and its contents, where the plaintiffs carried on distilling, evidence that they had taken no licence from the Gov.; that they had ins. in other cos. as brewers, without disclosing that they were distillers; and that they had made false representations to other cos.; and of the classification of risks and rates in other cos.; is relevant. [53 Penn. St. 353.]

In *Kern* v. *South St. Louis* Mut. Ins. Co. 1867, it was *held*, that a witness who has been many years an officer of an ins. co., and has become acquainted with the bus. of fire ins., is competent to give his opinion as to the effect produced by the erection of additions to the buildings ins. [40 Mo. 19.]

In *Hough* v. *People's* F. Ins. Co. 1872, where the pol. of ins. stated that "the Co. insures the Baltimore Warehouse Co. against loss or damage by fire to the amount of 20,000 dols., on merchandize their own, or held by them in trust, or in which they have an interest or liability," it was *held*,—1. That parol proof was not admissible to show that the pol. did not cover "merchandize their own, etc.," as therein stated, but was intended to cover the merchandize only under certain circumstances; and if the said merchandize was ins. by the owners thereof in other cos., that the interest of the Warehouse Co. in said pol. was not ins. at all. 2. That where a pol. of ins. is couched in plain and unambiguous language, resort to it alone must be had to determine the intention and meaning of the parties thereto: parol proof is inadmissible for such purpose. [2 Ins. Law Journal, 353.]

Life Ins.—In this branch a different class of questions arise,—peculiar in fact to the contract of L. Ins. Here again most of our cases are drawn from the U.S. Courts.

In the *Mutual Benefit* L. Ins. Co. v. *Ruse*, 1850, by the terms of the pol. it was stipulated that the prems. should be paid annually on a specified day, and if not so paid, that the Co. should not be liable for the payment of the sum insured or any part thereof, and that the pol. should cease and determine. The prem. was not paid within the time specified in the pol., but tendered within 30 days thereafter. A prosp. issued by the Co.

contained among other statements of the manner of conducting the bus. of the Co. the following : "Every precaution is taken to prevent the forfeiture of the pol." "A party neglecting to settle his ann. prem. within 30 days after it is due, or paying assessments within the 60 days specified within the Charter, or refusing to give satisfactory security upon the note, forfeits the interest he has in the pol." This proof was *held* to be inadmissible, because it was not referred to in the pol., and could not vary, extend, or enlarge the terms and obligations of the contract as contained in the pol. [8 Ga. 534.]

We shall see as we proceed other and later cases which are in conflict with this ruling —more especially *Wood* v. *Dwarris and others*, 1856, *Howell* v. *Knickerbocker* L. 1865, *Helme* v. *Philadelphia* L. 1869.

In *Collett* v. *Morrison* (Chairman of *Britannia* L.), before the English Equity Courts in 1851, it was *held*,—1. That if upon a proposal and agreement for life ins. a pol. be drawn up by the ins. office in a form which differs from the terms of the agreement, and varies the rights of the parties insured, Equity will interfere and deal with the case on the footing of the agreement, and not on that of the pol. 2. The Co. having had the chance of the contract turning out in their favour, cannot afterwards be permitted, on the ground of the inconsistency of the contract with their rules, to escape from it.

In *Hartman* v. *Keystone* Ins. Co. 1853, where the applicant for ins. stated that he was a farmer, and there was evidence tending to prove that he was not, but that he was employed in running railroad cars, and was a slave-catcher :—*Held*, that the testimony of a clerk of the Co., that they would not have ins. the life of a person employed in running cars on a railroad, or in catching slaves, or if they did, it would have been at a much higher prem., was competent. [21 Penn. State, 466.] See *Summers* v. *United States* Ins. and Trust Co.

In *Bevin* v. *Connecticut* Mut. L. 1854, in an action upon a life pol., it appeared that the insured was not allowed to pass the limits of the U.S. without permission of the Co., and that indorsed on the pol. was a permit to pass from any port of the U.S., in decked vessels, to and from any port in North or South America, California excepted, and to reside in California and adjacent country for one year. It appeared further that before departing under this permit, the insured told the Sec. of the Co. that he was going by way of Vera Cruz, and thence across Mexico, and that the Sec. remarked that such a course would do him good, and thereupon had the medical examination made ; that the pol. was not issued or the first prem. paid until some time after the departure of the insured, and after the Co. had reason to believe that he had taken the route which he said he should and did ; and that the Co. continued to receive the ann. prems. up to the time of the loss :—*Held*, that evidence to this effect was admissible to show the knowledge of the Co. as to the route taken by the insured ; and that their conduct amounted to a waiver of any forfeiture. [23 Conn. 244.]

In the case of *Wood* v. *Dwarris and others* [Directors of the *Equity and Law Life*], 1856, in an action on the pol., the defendants pleaded that the pol. was made upon the terms of a previous proposal, and upon the express condition that if any statement in the proposal was untrue, the pol. should be void ; and that a particular statement was untrue. The plaintiff replied, on equitable grounds, that before the pol. was made, the defendants had issued a prosp. containing a statement that all pol. effected by them should be indisputable, except in case of fraud ; and that the plaintiff effected the pol. on the faith of such representation. The defendants rejoined that the pol. was made on the basis of the proposal ; and that there was not, before or at the time of making the pol., any promise by the defendants that the pol. should be indisputable except in case of fraud, except that before the proposal the defendants issued the prosp. containing such statement. The Court decided in favour of the plaintiff. [11 Exch. 493.]

This decision is in conflict with *Mut. Benefit*, etc., v. *Ruse*, already given.

In *Sheldon* v. *Connecticut* Mut. L. 1856, it was *held*, that where a pol. fails to provide any particular mode for the payment of the prem., parol evidence is admissible to prove the mode agreed upon between the insurer and the insured. And is likewise admissible to prove that a stipulation in the pol. that it shall not be binding until the prem. is received by the Co., was waived. [25 Conn. 207.]

In *Wheelton* v. *Hardisty and others* [Directors of *Westminster and Gen.* Life], 1857, a similar question arose to that in *Wood* v. *Dwarris*, but there was no proof that the plaintiffs were induced by the prosp. to effect the ins.; and the Court, on appeal, *held*, that the jury were warranted in finding for the ins. co.

In *Summers* v. *United States* Ins., Annu., and Trust Co., 1858, the facts were these : A slave was insured as a labourer in a tobacco warehouse, and the pol. declared that he was not to be employed in any more hazardous occupation. While on his way to a sugar plantation, with intent to labour there, he was drowned : *Held*,—1. That the Co. was liable, even though working upon a sugar plantation were more hazardous than working in a tobacco warehouse: for the slave had not reached the plantation, and was not labouring there when drowned. 2. Parol evidence is admissible to show that a written assignment of a pol. was intended as a collateral security for an obligation which had been discharged before the suit was brought. 3. Testimony was properly rejected to the effect that the Co. would not have ins. at the rate they did had it been known that the slave would be subjected to the risk of a voyage on a steamboat. [13 La. An. 504.] See *Hartman* v. *Keystone* Ins. Co. 1853.

In *Rawls* v. *American* Mut. Life, 1863, it was *held*, that the statements of the insured (who was not a party in interest) respecting health, made previously to the ins., are not admissible. So evidence by experts and physicians, to prove that a person addicted to the excessive use of intoxicating drink is not an insurable subject, was properly excluded. The statements of a party referred to for information in regard to the health of the insured, and which were not made part of the pol., *and which were not received by the Co. until after the pol. was issued*, are not warranties. [27 N.Y. (13 Smith), 282.] See *Kelsey* v. *Universal* Life, 1868, where the ruling was different.

In *Howell* v. *Knickerbocker* Life, 1865, in an action upon a life pol., which provided that it might be "renewed ann. for life, if on the 15th day of July in each year the prem. was paid," it was in evidence that the deceased died on the 16th July without having paid the prem., and that the same was tendered to the office and refused several days after:—*Held*,—1. That the ins. expired on the 15th July, and that the subsequent tender was unavailing. 2. That the fact that the deceased was stricken with apoplexy on the day on which the prem. became due, and that he died on the following day, did not alter the case; and that he could not be considered dead on the 15th. 3. Parol evidence cannot be received to vary the terms of a life pol. as to the time when the prem. is to be paid. [3 Robertson, 232.] See *Helme* v. *Philadelphia* Life, 1869.

In *Cluff* v. *Mut. Benefit* Life, 1868, where the pol. contained a clause that if the insured should die in the known violation of any law of these States, or of the United States, or of any other country which he might be permitted by the pol. to visit or reside in, that the pol. should be void:—*Held*, that the record of a Provost Court showing the acquittal of the person who killed the insured was not competent testimony for the defence to prove that the insured had been guilty of a crime, as there was no privity of parties nor identity of issues. [99 Mass. 317.]

In *Ensworth* v. *New York* Life Ins. Co. 1868, which was an action by an agent against the Co., brought by the former to recover a per-centage on prems. on pol. procured by him:—*Held*, that a well-estab. custom among life ins. cos. and their agents, as to the kind and extent of property the agents may possess in the lists of pol. which they procure, might be proved for the purpose of explaining the contract. [7 Law Reg. N.S. 332.]

In *Kelsey* v. *Universal* Life Ins. Co. [of the U.S.], 1868, it was *held*, that in an action upon a life pol. by the party for whose benefit it was made, letters of the insured within a few days before the application was made, in which she spoke of the state of her health, were admissible in evidence to contradict the statements made in the application. [35 Conn. 225.] This last case conflicts with *Rawls* v. *American* Mut. Life, 1863.

In *Helme* v. *Philadelphia* Life, 1869, which was an action to recover prems. which had been wrongfully forfeited by reason of non-payment on the day when they became due, according to the condition of the pol., and plaintiff proved that she tendered and the Co. refused the last prem. within 30 days after it became due, it was *held*, that evidence may be received to show a general custom among life ins. cos. to allow 30 days for payment after the day stated in the pol. [61 Penn. State, 107.] This case is in conflict with *Howell* v. *Knickerbocker* Life, 1865.

In *Faunce* v. *State* Mut. Life, 1869, in defence against an action on a pol. of ins., expressed to have been "executed and delivered," but in fact never delivered, *parol evidence* is admissible that it was agreed between the parties to the instrument that it should issue only as a substitute for a previous pol. to be surrendered, which never was surrendered, but enforced and paid. [101 Mass. 279.]

In *Partridge* v. *Phœnix* Mut. Life, 1873, the plaintiff was employed as an agent of the Co., and having been discharged, claimed a right to a certain commission on the renewal of ann. prems. thereafter paid or to be paid on pol. issued through his agency. On trial he introduced in evidence a letter from the Co., written in reply to one asking information as to the precise relation which he bore to the Co., and under which he had acted in taking the pol. for which he claimed the add. commissions. This letter, among other things, contained the following: "Concerning your status in Missouri, it is simply this: you are working up a bus. for yourself, and are paid the highest commissions which we pay." For the purpose of explaining the meaning of this phrase, or affixing to it a meaning which it did not bear on its face, the plaintiff offered to prove by competent witnesses that it was the usage between ins. cos. generally and the agents in St. Louis, where the bus. of this agency was conducted, to pay the commission claimed:—*Held*, that the incorp. of local and limited usages and customs into an express contract, whose terms are reduced to writing, and are expressed in language neither technical nor ambiguous, and therefore needing no such aid in construction, amounts to estab. a principle that a custom may add to, or vary, or contradict, the well-expressed intention of the parties, made in writing. This is not consistent either with authority or the principles which govern the law of contracts. *Held*, also, that the letter was neither ambiguous nor technical, and to have admitted the usage offered in evidence would have been to make a contract for the parties differing materially from the written one under which they had both acted for some time. [2 Ins. Law Journ. 458.]

Marine.—The admissibility of the evidence of skilled witnesses, in this branch of the bus., follows much the same course as in the two preceding branches; but in some respects it takes even a wider range. It is, for instance, within the province of the jury to determine questions of fact relating to the existence of mercantile usages and to the use and meaning of mercantile terms. The customs of merchants, and the general and known usages of trade, when they have been ascertained and determined by a course of judicial decision, form part of the law merchant, and as such are thenceforward judicially noticed by the Courts.

The usages, however, of a particular trade, or of a particular place, as the usages at Lloyds, must be proved by parol evidence to the satisfaction of the jury; and whether the parties to the contract must, from their place of residence, habits of bus., or other circumstances, be taken to be cognizant of the usage at Lloyds, is also a question for the jury, according to whose finding thereon the Courts hold the parties bound, or not bound, by the usage. It is, however, in all cases for the Court to decide whether evidence of usage be admissible, and the principle upon which they proceed in determining this point is, that such evidence is admissible only to explain what is doubtful, never to contradict what is plain.

We do not propose to enter upon any review of the cases here. They are interminable. In the above outline we have followed Arnould. He adds: The construction of the pol., when the meaning of its terms is ascertained, is for the Court; but the interpretation to be put upon technical terms, the extension given by mercantile usage to descriptions of ports and places named in the pol., and the construction of peculiar, novel, or unusual clauses, is for the jury: in these cases it is for the jury to say what the meaning of the expression is; but for the Court to decide what the meaning of the contract is. (3rd ed. p. 1068.)

Other Branches.—In regard to other branches of the bus. it may be sufficient to say that *Accident* and *Health* Ins. contracts would follow the ruling as to *Life* Ins. That *Boiler* Ins., *Cattle* Ins., and *Glass* Ins. would prob. follow *Fire* Ins.; while *Fidelity* Ins. would prob. be governed more by the usages of trade and commerce, like *Marine* Ins. [CLAIMS.] [CONSTRUCTION OF INS. CONTRACTS.] [CONTRACT OF INS.] [FIRE INS., CONTRACT OF.] [LIFE INS., CONTRACT OF.] [MARINE INS., CONTRACT OF.]

EVOLUTION.—A term applied to a theory of non-sexual generation, according to which the first created embryos of each species must contain within themselves, as it were in miniature, all the individuals of that species which shall ever exist; and must contain them so arranged that each generation shall include not only the next, but embodied within, all succeeding generations. Hence this theory has also received the name of the *Emboitement theory*. It appears to include the *Nebular theory*.

The term is also used in Algebra and Arithmetic, signifying the extraction of roots: being the inverse operation to involution.

EWAGE [or AQUAGE].—Toll paid for water passage.

EWART, FRANCIS, Barrister-at-Law, was Act. and Sec. of *London and Westminster* Mut. during its brief career. In 1843 he promoted the *Equity and Law*, and became its Resident Director, which position he occupied for a very short time.

EWART, JOSEPH, M.D., in the Bengal Medical Service, pub. in 1859: *A Digest of the Vital Statistics of the European and Native Armies in India.*

EWART, PETER, formerly Agent in Lond. for the *Standard* L., afterwards Sec. of the Lond. branch of the same Co. He was also Man. Director in Lond. of the *Colonial* So. from its formation down to his death in 1854.

EX GRATIA.—An act of grace; a gift.

EX MERO MOTU.—Out of mere will: or as the lawyers say, of his own mere motion.

EX NECESSITATE LEGIS.—From the necessity of the law.

EX NECESSITATE REI.—From the urgency of the case.

EX OFFICIO.—Officially; by virtue of office.

EX PARTE.—On behalf of. A proceeding by one party in the absence of the other.

EX POST FACTO.—From something after the fact. Generally applied to laws passed with a retrospective effect.

EX PRÆCEDENTIBUS ET CONSEQUENTIBUS OPTIMA FIT INTERPRETATIO.—Law Maxim. The best interpretation is made from the context.

EXACERBATION.—An increase in the violence of symptoms of disease; as of pain, and especially of fever.

EXAMINATION.—The act of eliciting by questions a person's knowledge of facts or science. A witness undergoes three examinations—(1) examination in chief, which is made by the party calling him; (2) cross-examination by the opposite party; and (3) re-examination, by the party who called the witness, which is confined to matters arising out of the cross-examination, and supports the examination in chief.

EXAMINATION OF BOOKS in connexion with fire losses. See INSPECTION OF BOOKS.

EXAMINATION OF LIVES.—See MEDICAL SELECTION, where the subject will be considered in all its bearings.

EXAMINATION UNDER OATH.—It is a usual condition in fire pol. in the U.S. that the insured will not only produce vouchers in reference to any loss which may become a claim under the pol., but will submit to an examination under oath. An almost analogous requirement is made under most of the Brit. pol. There are several cases in the American law-books bearing upon the point. One will suffice for illustration.

In *Bonner* v. *Home* Ins. Co. 1861, it was stipulated in the pol. that the insured should, if required, submit to an examination under oath, by the agent of the Co., and answer all questions, etc., and subscribe such examination when reduced to writing, and until examination, being required, was had, the loss should not be payable. In an action upon the pol. it appeared that such an examination, being required, had been in part had, and reduced to writing, but not subscribed, and without objection from the insured was adjourned for two or three weeks, when it was to be completed; but when applied to for that purpose by the agent, within the time limited, the insured refused to submit to further examination, or to subs. that already taken:—*Held*, that such refusal, under the circumstances of the case, was unwarranted, and therefore by the terms of the pol. the loss had not yet become payable. [13 Wis. 677.]

EXANTHEMA.—Efflorescence; an eruptive disease. A term formerly equivalent to *eruptions* generally; but now limited to *rashes*, or "superficial red patches irregularly diffused, and terminating in cuticular exfoliations."—*Hoblyn*. Bateman, under the term *Exanthemata*, comprehends Rubeola, Scarlatina, Roseola, Urticaria, Puerpura, and Erythema.

EXANTHEMATOUS.—A term which includes in its meaning all eruptive diseases accompanied by fever.

EXCAMBIUM.—An exchange; a place where merchants meet to transact their bus. Also an equivalent to recompense; a recompense in lieu of dower *ad ostium ecclesiæ*.

EXCEPTION.—Immunity; freedom from imposts; a privilege to be free from service, or appearance. In Law, a stop or stay to an action. In Common Law proceedings, a denial of a matter alleged in bar of an action. In Chancery, exceptions may be taken to pleadings if scandalous, and if a defendant's answer be insufficient, the plaintiff may file exceptions to it. In the Scotch Law, *exception* is synonymous with *defence*.

EXCEPTIONAL RISKS.—These are items, or articles, specifically excluded from ins. under the terms of the pol. Most fire pol. contain exceptions, such as the following:

> This pol. does not cover property held in trust, or on commission, unless expressly described as such; nor china, glass, looking glasses, jewels. clocks, watches, trinkets, medals, curiosities, manuscripts, prints, paintings, drawings, sculptures, musical, mathematical, and philosophical instruments, patterns, models, and moulds, *unless specially mentioned in the pol.;* nor deeds, bonds, bills of exchange, promissory notes, money, securities for money, stamps, and books of account; nor gunpowder; nor loss or damage by fire occasioned by or happening through invasion, foreign enemy, rebellion, insurrection, riot, civil commotion, or any military or usurped power whatsoever, or by or through any earthquake or hurricane, or by or through the spontaneous fermentation or heating of the subject insured; nor goods destroyed or damaged while undergoing any process by which the application of fire heat is necessary; nor loss or damage by explosion, except loss or damage to a building, or property contained therein, caused by explosion of gas in such building not being a building in which gas is manufactured.

The articles named in the first section of the clause may be insured against usually upon payment of a specially agreed rate of prem., and they are then specifically mentioned in the pol. in such a manner as to override the exception. But those items and contingencies mentioned in the second portion of the clause are usually excluded as a fundamental condition of the ins. [EXPLOSIONS.]

In the U.S. the following add. exceptional clauses are usually included in F. pol.:

> Nor for any loss in buildings unprovided with good and substantial brick or stone chimneys.
>
> Nor in consequence of any neglect or deviation from the laws or regulations of police, where such exist.

This last is somewhat vague, and has been held by the U S. Courts "to refer only to articles of an intrinsically dangerous nature, as liable to cause injury accidentally or by carelessness; and not to refer to liquors, the traffic in which was made illegal by statute." The preceding exception appears only to relate to the condition of the chimneys at the commencement of the risk.

Life pol. contain "exceptional clauses" in regard to non-residence in certain climates, and as to suicide, duelling, etc.

Accident pol. exclude all disability arising from causes not the direct result of accidental injury, as gout, hernia, erysipelas, etc.; and also all voluntary and unnecessary risks—that is, risks not necessary to the proper occupation and pursuits of the insured—such, for instance, as riding on railway locomotives, going up in balloons, etc.

Transport Ins. usually covers loss on coin, bullion, jewels, etc.,—things excepted from ordinary fire pol.—as being merchandize for transportation. We have seen how the Ins. Ordin. of Amsterdam contains special clauses for the ins. of diamonds—exempted from ordinary fire pol.

In *Marine Ins.* the exceptional clauses come under the designation of EXPRESS WARRANTIES, and under that title we shall speak of them.

In *Cattle Ins.*, *Fidelity Ins.*, *Glass Ins.*, *Steam-boiler Ins.*, and indeed in all branches of Ins., there are necessarily "exceptional clauses." These will be spoken of under those several heads. [PETROLEUM.]

EXCESS POLICY (FIRE).—A technical designation given to a class of pol. not unfrequently issued upon merchandize. Its object is in many respects analogous to that of floating pol. It is intended to cover *generally* upon all property already ins. *specifically*, so that in the event of loss or damage, any deficiency of such specific ins. upon any portion of the property under the protection of the *excess ins.* may be fully met. It differs from a floating pol., however, in being duly recognized as *excess ins.* by the specific pol. upon the same property, thus avoiding any conflict of conditions, as is the case in the arbitrary stipulation of the floater declaring itself to be excess ins. It is usually confined to one locality, and is seldom subject to average. It should always go in pairs, *i.e.* be accompanied by the specific pol. containing its proper recognition.

Being liable *only* for the excess of loss above the *specific* ins., and the chances of being called upon being thus more or less remote, the rate of prem. is always a shade lower than that on specific pol. upon the same subjects. Unlike the *floater* proper, the *excess* pol. never changes into general or specific ins.; it is confined to the excess only, and if there be no such excess, there is no liability. But, in case of loss in *excess* of the specific ins., it becomes *specific* in the proportion of the loss upon the several subjects covered, as in compound pol.

It is usually stipulated in the *excess* pol. that a certain amount of *specific* ins. shall be maintained upon the property, or the insured are to be held as co-insurers for any deficiency of such sum at the time of loss. In case of "other *excess* ins." upon the property, it will be held to contribute *pro rata* to the payment of the loss *in excess of the specific ins. only*. To make this clear the following clause is usually inserted:

> The liability of the insurers under this pol. shall be in the proportion that the amount of this ins. shall bear to the total amount of excess ins. upon the entire property at risk.

The *excess* pol. therefore resembles the *general* pol., with the add. stipulation that the amount therein named is declared to be in *excess* of any sum or sums already ins. *specifically* upon all or any of the subjects therein named; and conditioned further, "not to be liable to contribution for loss thereon, until all the specific ins. shall have been exhausted."
—*Griswold.*

The National Board pol. (U.S.) requires a special recognition of "excess pol." [FLOATING POL.] [GENERAL POL. (FIRE).]

EXCHANGE (from the Latin *cambium* and *permutatio*).—A building or other place in considerable trading cities [often contracted into '*Change*], where merchants, agents, bankers, brokers, and other persons concerned in commerce, meet at certain times to confer and treat together of matters relating to exchanges, remittances, payments, adventures, insurances, freights, and other mercantile negociations, both by sea and land.

Also used to designate that species of mercantile transactions by which the debts of individuals residing at a distance from their creditors are satisfied without the transmission of money.

Exchange has, in earlier times, been made to cover many transactions having a bearing upon maritime commerce and upon ins. In Antwerp in 1563 Bottomry was termed "Exchange upon the Hull or Keel of the Ship."

In Dr. Thomas Wilson's *Discourse upon Usurie*, 1572, writing of "Exchange and what it is," he says:

> The Exchange, according to the first institution thereof, is verie good, and most necessarie, without further talke, if they be honest and good themselves, that use it. And as the trade is very needful, and the best waie to maintaine intercourse betweene merchant and merchant, countrey and countrey: so is the plaine and open dealing therein highlie to be esteemed, such as none can justlie mislike, or in anie point dispraise. The name of Exchange, called in latine *Cambium*, is an ancient and proper word for this purpose, and doth in maner import no other thing, than to barter, or exchange one thing for another.

He then proceeds to explain the abuses which had grown up under the term Exchange. These we shall notice in detail under USURY.

Molloy, in his *De Jure Maritimo et Navali*, 1676, gives a very instructive account of Exchange. He says:

> The Exchange for monies is of great antiquity, as well by observations of the Hebrew customs, as of those of the Romans. . . . . By the Romans it is supposed to be in use upwards of 2000 years, moneys being then elected out of the best of metals, to avoid the tedious carriage of merchandize from one country to another: So other nations, imitating the Jews and Romans, erected mints, and coyned monies, upon which the exchange by bills was devised, not only to avoid the danger and adventure, but also its troublesome and tedious carriage. Thus kingdoms and countries having by their soveraign authorities coyned monies, caused them to appoint a certain exchange for permutation of the various coyns of several countries, without any transportation of the coyn, but giving *par pro pari*, or value for value, with a certain allowance to be made to those *exchangers* for accommodating merchants.

He proceeds to say, "As commerce became various, so exchange numerous; but generally reduced to four, (1) Cambio commune, (2) Cambio real, (3) Cambio siccè, and (4) Cambio fictitio," and these he describes:

> *Cambio commune*, in England, were those that were constituted by the several kings, who having received moneys in England would remit by exchange the like summ to be paid in another kingdom. Edward the III., to ascertain the exchange, caused tables to be set up in most of the general marts or ports of England, declaring the value of all or most of the foreign coyns of those countries, where his subjects held correspondence or commerce, and what allowances were to be made for having moneys to be remitted to such countries or kingdoms.
>
> *Cambio real*, was when monies were paid to the Exchanger and bills drawn, without naming the species, but according to the value of the several coyns; which two officers were afterwards incorporated,

> and indeed was no more but upon payment of monies here in England to be repaid the just value in money in another country according to the price agreed upon between the officer and deliverer to allow or pay for the exchange of the money, and the loss of time.
>
> *Cambio siccè*, or dry exchange, is when a merchant hath occasion for £500 for a certain time, and would willingly pay interest for the same; the banker being desirous to take more than the statute gives, and yet would avoid the same [stat.], offers the £500 by exchange for *Cales* [Calais], whereunto the merchant agrees; but the merchant having no correspondence there, the banker desires him to draw his bill, to be paid at double or treble usance, at *Cales* by *Robin Hood* or *John-a-Noakes* (any feigned person), at the price of exchange then current; accordingly the merchant makes the bill, and then the banker pays the monies; which bill the banker remits to some friend of his to get a protest from *Cales* for non-acceptance, with the exchange of the money from *Cales* to *London*, all which with costs the merchant is to repay to the banker; sometimes they are so conscientious as not to make above 30 p.c.!
>
> *Cambio fictitio*, when a merchant hath occasion for goods to freight out his ship, but cannot well spare money; the owner of the goods tells him he must have ready money; the buyer knows his drift. It is agreed that the seller shall take up the monies by exchange for *Venice* or any other parts; but then the merchant must pay for exchange and re-exchange. So likewise when the merchant is to become indebted to the banker, they are contented to stay, the merchant paying exchange or re-exchange; the which he will most certainly compel him to do.
>
> These two last ways of grinding the face of the generous merchant was afterwards prohibited. . . . [Usury.]

Finally, he gives us a more rational definition of *Exchange* as now ordinarily used than is usually met with:

> As money is the common measure of things between man and man within the realm, so is exchange between merchant and merchant within and without the realm; the which is properly made by bills when money is delivered simply here in *England*, and bills received for the repayment of the same in some other country, either within the realm or without the realm, at a price certain and agreed upon between the merchant and the deliverer. For there is not at this day any peculiar or proper money to be found in specie whereupon outland exchanges can be grounded; therefore all foreign coins are called imaginary.

They did not at that period take into account "Balance of Trade," "Debasement of Coin," "Arbitration of Exchange," and other modern refinements.

In *Thellusson* v. *Bewick*, 1793, the question was, whether the insurers were liable on the difference of exchange. Lord Kenyon said that nothing was clearer than that the insurers did not insure against the debasement of the coin. That the question, therefore, of the rise or fall of exchange, was entirely, in this respect, out of the province of the jury to decide on in the present question. That in case the exchange had risen, that the insured would have had the benefit of the rise; and therefore, in case of a fall, should submit to the loss.

See Bills of Exchange; Bottomry; Expenses for Ship's Use; Usury; also several other headings which follow.

EXCHANGE, Advance, and Investment Co. Lim.—Founded in Lincolnshire in 1870, with an authorized cap. of £20,000, in shares of £1. Its objects are to transact every description of life bus., and with this special additional feature: "To secure medicine and medical aid in sickness."

Its accounts, as regis. up to the end of 1872, show an exceedingly small bus., viz. life prems. for the year, £185 12*s.*; life assu. fund at end of year, £217 6*s.* 7*d.*; accidental account, £16 4*s.* 8*d.*; sick account, £2 9*s.*; deposit and loan account, total transactions during the year, £9501; proprietors' cap. paid up, £1319 19*s.* 9*d.* The bus. is mostly "industrial." In answer to the questions of the 6th schedule, the total prems. received were stated at £129 17*s.* 2*d.* No annuities granted; average rate of int. on Life Fund 5 p.c. Surrender values, after payment of 7 ann. prems. 40 p.c. of "entire prems. received"; at the end of 14 years 50 p.c., "adding 10 p.c. for every 7 years' duration of the pol." No bus. transacted at other than European rates, but "second class or invalid lives will be assured at the ordinary tabular rates, the expectation of living being divided into four equal portions." *Example*: "Should an insurer for £1000 die during the 1st, 2nd, 3rd, or 4th portion of the expectancy, the Co. would engage to pay £200, £400, £600, or £800 of the sum assured; and should the life survive the expec., the full sum of £1000 would be paid on the death of the assured."

The Gen. Man. is Mr. C. T. Southwell.

EXCHANGE, Arbitration of.—The mode by which debts due to or from other countries or states are adjusted, by means frequently of dealings with entirely different countries or states, as that England may owe a balance to France, but holds debts due to herself from Hamburg; in which case the debt due to France may be met by bills drawn on Hamburg. This mode of meeting obligations is called the Arbitration of Exchange.

EXCHANGE, Bill of.—See Bill of Exchange.

EXCHANGE-House Fire Office.—This was an ins. office for granting fire policies opened by Charles Povey, probably about the year 1706. When the *Co. of London Insurers* [which became the present *Sun* Fire] commenced bus. in 1710, an adv. appeared in the *British Mercury* as follows: "In a few days the Co.'s policies will be ready and delivered *gratis* to all persons who had subscribed to the *Exchange-House* Fire Office, and continue to ins. their houses and goods from fire with the Co. of *London Insurers*, they only paying the quarterage as usual." [Sun Fire Office, Hist. of.]

EXCHANGE Life Asso.—Projected in 1855, but did not become completely founded. The prosp. said:

> The Directors of this Asso., while availing themselves of the best features which have accompanied

> the development of Life Assu., will carefully avoid whatever may be characterized as *hazardous* or *experimental*, and will conduct their bus. only on the tried principles adopted by long-estab. and successful offices.

Mr. Thomas Smith was the promoter, and the project prob. took shape in the following year under the the next succeeding title.

EXCHANGE Life, Loan, Accident and Casualty Co.—Founded in 1856, being prob. the more matured development of the preceding year. Mr. Thomas Smith was founder, and became man.; but we believe no bus. was transacted, and in the following year the Co. passed out of existence.

EXCHANGE of Life Pol.—See Substitution of Lives.

EXCHANGE of Livings.—This is effected by resigning them into the bishop's hands, and each party being inducted into the other's benefice; if either die before both are inducted, the exchange is void.—See 31 Eliz. c. 6, s. 8 (1594).

EXCHANGE, Par of.—If the coins of any country, estimated at their mintage valuations, are compared with the coins of another country, estimated also under similar conditions, the proportion deduced from such a comparison is called a *par of exchange*. Where there is any variation in value, arising from alloy, or from over-valuation, or from any other recognized circumstance, these have to be taken into account.

EXCHANGE, Rate of.—By this term is meant the price of the money of one country, reckoned in the money of another country. The fluctuations arise from circumstances which we have already passed in review. See Exchange.

EXCHANGE upon the Hull [or Keel] of the Ship.—Bottomry loans were in earlier times known by this designation. [Bottomry.]

EXCHEQUER Chamber, Court of.—A tribunal of Appeal to correct the errors of other jurisdictions, viz. of the three Superior Courts of Common Law. In this Court the writ is tried before the Judges and Barons of the two Courts which had not given the former judgment. Error from this Court has heretofore been to the House of Lords. Under the Judicature Act, 1870, it will hereafter be to a special tribunal created by that Act.

EXCHEQUER Life Assu. So.— Projected in 1849, with a "temporary cap." of £50,000, in 5000 shares of £10, "to meet current expenses and liabilities until the So. is effectually estab." The prosp. said:

> The *Exchequer* So. is founded upon a new principle, which affords to the assured the greatest possible present and prospective advantages that can be conferred by Life Assu. In order to carry out this important principle on a scientific, safe, and solid basis, the T. of rates have been expressly calculated by the Act., and it will be found that though the prems. are not higher than those of other respectable mut. offices, the So. is enabled to offer advantages to assurers of that decidedly beneficial and sterling kind, which every one interested in Life Assu. will readily understand and appreciate.
>
> A life pol. effected in the *Exchequer* So. is made to possess, to the extent of one-half of the payments, the same intrinsic commercial value as a bank note, which may be cashed with facility at any time; *and thus the pol. not only provides the due payment of the sum assured, with bonus add. in case of death; but from year to year, in the hands of its possessor, it becomes an accumulating present property of known value, which may at once be realized, or employed as a real and undoubted security whenever required.* Also, as regards the possible event of the assured finding it necessary at any time to abandon his pol., his mind is not in any way disturbed by doubt or speculation as to the proportionate sum he will or ought to receive in consideration of its special value, as *one-half of the payments* will in such case, as a matter of course, be promptly returned by the So.

Then, under the head of "Advantages offered by the So.," we find the following remarkable provision:

> The assured is *at all times* entitled to receive an *immediate advance* from the So. to the extent of *one-half the amount of his paid ann. prems.*, on his paying int. thereon at the rate of 5 p.c. p.a., and for the sum so withdrawn, *no personal or other security will be required, the assured himself will not be personally liable, nor will the pol. be necessary*. . . . [The italics are given as we find them.]

Half the prem. returnable at any time upon surrender of pol. upon which full prems. had been paid. Lapsed pol. might be revived upon proof of health, and without payment of int. on the arrears of prem. "The So. grants assu. against every combination of life contingencies." "Doubtful, invalid, or diseased lives will in no case be rejected, but will be accepted on payment of fair and equitable extra prems." "Pol. will be payable in case of death by duelling." "Pol. will not be disputed, and the amount will be payable three calendar months after proof of death." "A special fund will be reserved out of profits, and at suitable times applied to the repayment of the subs. cap.," etc.

The Consulting Act. was Mr. W. S. B. Woolhouse; the Sec. Mr. R. Smithson Parker, from whom prosp., etc., might be obtained, "at the temporary offices of the So., 22, Parliament Street, Westminster, to whom also applications for shares may be addressed."

The project was never completely regis.

EXCHEQUER Life Assu. Co.—Provisionally regis. 14 Feb. 1855. Mr. Edward W. Morris, Glasgow, was one of the promoters. The project never reached a complete stage of existence.

EXCHEQUER and Railway Mut. Life Assu. So.—This Co. was founded in 1851, and commenced bus. in the early part of the year; but it failed to realize the leading idea embodied in its name, and died of impecuniosity in the year of its birth. Mr. Henry Harris Creed, of the Lond. and North-Western Railway, was the regis. promoter of the Co.

EXCISE.—The name given to the duties or taxes laid on certain articles produced and consumed at home. Certain duties and licences are also classed under this head. [Duties, Ins. to evade Payment of.]

EXCISE Fund.—In 1837 it was in view to estab. a fund for the service of the Excise, upon the model of the Customs Annu. and Benevolent Fund, of which we have already given an outline.

EXCISION (from the Latin *excisio*, a cutting out).—Total extirpation of an articulation, or the entire removal of all the bones which form a joint, with as much as possible of the capsular ligament.—*Hoblyn.*

EXCITABILITY.—Sensibility of organized beings to the action of stimulants or excitants; irritability.

EXCITANTS (from the Latin *excito*, to stimulate).—Stimulants; medicines which excite nervous power. These are termed *general*, when they excite the system, as spirit; and *particular*, when they excite an organ, as in the action of diuretics on the kidneys.—*Hoblyn.*

EXCITEMENT.—The general effect produced by excitants.

EXCITING Cause.—The immediate cause of the development of a disease, as distinguished from the circumstances of its origin. There is reason to believe that contagious poisons may be received into the system and may remain in it some time without manifesting their usual consequences, until some accidental cause calls them into full action, and gives birth to the usual train of symptoms. Circumstances of this kind have been called *concurring* or *exciting causes.* Generally speaking, they are identical with those which, acting upon the body before exposure to contagion, are termed predisposing causes. In various kinds of fevers this kind of action has been observed. In *Erysipelas*, as in *Gout*, the action of very simple, though well understood, exciting causes is often manifested. In *Accident Ins.* these "secondary causes" are usually excluded from the risks undertaken by the co.

EXCORIATION.—An abrasion of the cuticle.

EXCRESCENCE (from the Latin *excresco*, to grow from).—A term applied to a preternatural growth, as a wart, wen, etc.

EXCRETION.—The *function* of discharging the waste products of the body by means of the *excretory organs*, viz. the skin, the lungs, and the kidneys. The term is also applied to the excreted *products*, as the perspiration, urine, feces, etc.

EXCRETORIES.—The ducts which convey the secreted fluids from the glands.

EXCUSS.—To seize and detain by way. Hence *excussion*, seizure by law.

EXECUTED.—Something done or completed.

EXECUTED Estates.—Estates in possession.

EXECUTED Remainder.—A vested remainder. [Vested Remainder.]

EXECUTED Trust.—Implying that the trustee has disposed of the estate according to his trust.

EXECUTION.—The last stage of a suit giving possession of anything recovered at Law or in Equity. It is styled final process. *Executio est finis et fructus legis*—execution is the end and fruit of the law.

In its ordinary sense "execution" is understood to imply the act of levying upon furniture, goods, etc.; and in this view it has sometimes become a question of contention under ins. contracts.

In *Franklin* Ins. Co. v. *Findlay*, 1841, where the goods of the insured were levied on by the sheriff by virtue of an execution, and the sheriff took actual possession of the goods, and left them in the store of the insured with doors and windows fastened up, and then went out of town, taking the key of the store with him, and during his absence a fire occurred totally destroying them:—*Held*, that the insured still had an insurable interest in the goods to their full value, and was entitled to recover. [6 Whart. Pa. 483.]

In *Clark* v. *New England* Mut. Ins. Co. 1850, it was *held*, that the levy of an execution on premises ins. will not avoid a pol. having a condition against alienation, for until the expiration of the time for redemption, the assured still retains an interest in the premises. [6 Cush. Mass. 342.]

In *Rice* v. *Tower*, 1854, where goods had been levied on by the sheriff who did not remove them from the insured's store, but proceeded to sell the same at auction, and a part of them had been sold, and the sale was yet going on at the time of the fire:—*Held*, that it was not an alienation that avoided the pol. [1 Gray, Mass. 426.]

In *Rex* v. Ins. Co. 1858, where the pol. provided that "the ins. by this pol. shall cease from the time the property hereby ins. shall be levied on or taken into possession or custody under an execution or other proceeding at Law or in Equity:—*Held*, that the clause referred to executions subsequent to the taking out the pol., and the fact that the property was under execution at time of the ins., and continued so until the time of the fire, did not affect the right of the holder of the pol. [2 Philadelphia, Pa. 357.]

In *Judkins* v. *Union* Mut. F. 1859, the Charter of the Co. provided that "execution shall not issue on any judgment against said Co. until after the expiration of three months from the rendition thereof:"—*Held*, that the provision was binding; and execution was ordered to be stayed for three months, although a judgment on the same claim had been rendered before in another State. [39 N. H. 172.]

EXECUTIONS, Public.—The punishment of death for murder was ordained 2348 B.C.

(*Gen.* ix. 6). The Jews generally stoned their criminals to death. Draco's code punished every offence with death. By Solon it was limited to murder. Drowning in a quagmire was the form of execution among the Britons. The first execution by hanging is said to have taken place in 1241 A.D. In 1405 the Archbishop of York was executed. For an account of the cruel practices attending executions see *Quarterly Review*, 1849 (vol. 85, p. 391). The place of execution in Lond. was removed from Tyburn to Newgate in 1783. The punishment of death was abolished for a great number of offences between 1824-9. The dissection of the bodies of executed persons was abolished in 1832. By the Criminal Law Consolidation Acts, death was confined to treason and wilful murder in 1861. Capital punishment within prisons was enacted by Parliament in 1868.

Deaths by public execution rank as *Order* 5 in the class of VIOLENT DEATHS, and are confined to hanging. They have played an important part in increasing the mort., and therefore of lessening the pop. of the U.K., to say nothing of Europe and the rest of the world. In the reign of Henry VIII. (38 years) it is shown [by Stow] that no less a number than 72,000 criminals were executed, averaging 5 per day during the entire reign; many, if not most, of these for very small offences. But a change has gradually come about. In the 10 years between 1820 and 1830, there were executed in England alone 797 criminals; but as our laws became less severe, the number of executions decreased. In the 3 years ending 1820 the executions in E. and W. amounted to 312; in the 3 years ending 1830 they were 178; in the 3 years ending 1840 they were 62. The following is a T. of the ann. executions in England from 1847 downwards:

TABLE OF PUBLIC EXECUTIONS IN ENGLAND.

	England.	Lond.		England.	Lond.		England.	Lond.
1847	8	1	1856	15	2	1864	19	8
1848	12	2	1857	13	1	1865	8	2
1849	15	0	1858	11	1	1866	12	1
1850	6	0	1859	9	1	1867	10	2
1851	10	0	1860	12	1	1868	12	2
1852	9	1	1861	15	1	1869	10	3
1853	8	1	1862	16	2	1870	6	2
1854	5	0	1863	22	1	1871	3	0
1855	7	2						

In the ten consecutive years 1858–67 they show a variation from 1 in two millions of the pop. in 1858, to 1 in each million in 1862-3 and 4, 1 in three millions in 1865, and 1 in two millions again in 1867.

Of the numbers executed in 1867, the sexes were thus divided: males, 10; female, 1. Of the males 1 was between the ages 15 and 20; 3 between 20 and 25; 5 between 25 and 35; and 1 between 45 and 55. The female was between 25 and 35.

The Reg.-Gen. calls attention to the fact that the number of persons executed in the several years will not necessarily correspond with that in the same years of the "Criminal Returns," inasmuch as the executions recorded in each year in the latter are derived from the dates of conviction, while the numbers given in the above T. are classed under the years in which the deaths are registered.

The effect of the conditions of life pol. in regard to deaths of this class will be discussed under HANDS OF JUSTICE, DEATH BY. [VIOLENT DEATHS.]

EXECUTOR.—A person appointed by a testator to carry out the directions and requests in his will, and to dispose of the property according to his testamentary provisions after his decease. The duties and responsibilities of executors are varied. The executor is the proper person to give a discharge for life pol. forming part of the estate of the testator, *i.e.* pol. which have not been settled or otherwise assigned. It has been held that executors are not bound to ins. goods and property against fire; while, on the other hand, that it was a duty to keep in force a life pol. An executor may ins. in his own name even before proving will. These and other cases we propose to pass briefly in review.

In *Lynch* v. *Dalzell and others* [Man. of *Sun* Fire], before the House of Lords, 1729, it was determined that pol. against loss by fire are not in their nature assignable; nor can the interest in them be trans. from one person to another, without consent of the office. But in case of death, the interest therein shall continue to the representative. But if before the loss the executor has sold the property, and after the loss assigns the pol. to the purchaser without the consent of the Co. (as was the case here), the Co. is not liable to the purchaser. [3 Brown P.C. 497; 4 Id. 431.]

In *Mildmay* v. *Folgham* [Public Officer of *Hand-in-Hand*], 1797, there was an ins. of a house by its owner in a mut. asso., one of whose articles provided that in case of the death of a member, his interest should survive to his executors, administrators, or assigns, who should be possessed of the pol. The insured died, the premises descended to the heir, and afterwards the fire occurred:—*Held*, that no person could have the benefit of the pol. but the personal representative [*i.e.* executor, etc.], who could not in this case be construed into a trustee; and that the heir could not sustain a claim under the pol. [3 Ves. Junr. 471.] See *Wyman* v. *Wyman*, where the opposite principle is laid down.

In *Parry* v. *Ashley*, 1829, the facts were as follow. Parry took a pol. on a house, and died, devising the same, subject to a charge in favour of Ashley, whom he appointed administratrix. Ashley, while administratrix, renewed the pol., and during the renewed term the house was burned:—*Held*, that as Ashley renewed the pol. while administratrix, she must be deemed to have renewed it as administratrix; and that the proceeds of the ins. were of the personal estate, but subject to a trust in favour of those interested in the real estate. [3 Simons, Ch. 97.]

In *Baily* v. *Gould*, 1840, it was *held*, that executor is not bound to ins., or continue an ins. of his testator's property against fire. [4 Young and Collyer, 221.]

In *Fry* v. *Fry*, 1859, the testator, a lessee, was bound to insure. The ins. expired on 25 March, and he died on 27th without having paid the prem. The prem. was not paid by his executors, and the house was burned down on the 26th May:—*Held*, that the executors were not personally liable for not having kept up the ins. [27 Beav. 146; 28 L. J. Chanc. 593.] See *Garner* v. *Moore*, 1858.

In *Phelps* v. *Gebhard* F. Ins. Co. 1862, it was *held*, that executors, to whom real property is devised by their testator's will, have an insurable interest therein by virtue of the trust; and where the insurers issue a pol. to the testator in his lifetime, which does not require him to show that he was owner in fee, nor forbid an assignment of the property, and after his death they renew the ins. in favour of his executors, without inquiry or representations as to their interest, the executors may recover thereon, although before the renewal their interest has been, without the knowledge of the insurers, but in good faith, changed to a mortgage interest, by their selling the property, and taking back, at the same time, a purchase-money mortgage. [9 Bosw. N. Y. 404.]

In *Wyman* v. *Wyman*, 1863, it was *held*, that where the contract of ins. is made with the assured, "his executors, administrators, and assigns," the right of action upon the pol. at the death of the insured vests in his personal representative; but the ins. being on a building, which is real estate, the interest in the property ins. belongs to the heirs-at-law. The executor or administrator is a trustee for the heirs, who alone are damnified by the loss of the building, and who alone are entitled to the indemnity. [26 N. Y. 253.]

This case is in conflict with *Mildmay* v. *Folgham*, 1797.

The preceding cases relate to F. Ins.; the following case relates to *L. Ins.*

In *Garner* v. *Moore*, 1858, where an executor, without special authority, applied the testator's assets, for several years, in insuring the life of a debtor to the estate, and then dropped the pol. without consulting the parties beneficially interested, or applying to the Court for directions, it was *held*, that he was personally liable for the whole amount which would have been recovered if he had kept up the pol. [3 Drewry, 277; S. C. 24 L. J. Ch. 687.] [ASSIGNMENT OF INS. POL.] [INSURABLE INTEREST.] [TRUSTEES.]

EXECUTOR AND TRUSTEE COS.—In 1838 there was estab. at the Cape of Good Hope, under the title of the "Board of Executors," a Co. for undertaking executorships, trusteeships, and the management of all descriptions of trust property. In 1843 the Co. received from the Gov. Letters of Incorp.; and it is still carrying on a considerable bus.

In 1853 a similar project was set on foot in Lond. with a proposed cap. of £1,000,000, in 50,000 shares of £20. An excellent board, called the executive council, was formed, with Mr. Charles Twigg for Sec. The prosp. was issued, and the Co. advertised; but it fell through. A detailed statement of the bus. proposed to be undertaken was set forth in *Post Mag.* Alm. 1854, p. 126.

The scheme of *Settlement pol.* propounded by the *Norwich Union* Life a few years since was a modification of the same idea.

EXECUTORY.—Performing official duties; the personal estate of a deceased; whatever may be executed; contingent.

EXECUTORY CONTRACT.—Contracts are distinguished into Executed and Executory; *executed* where nothing remains to be done by either party, and where the transaction is completed at the moment that the agreement is made; as where an article is sold and delivered, and payment thereof is made on the spot; *executory* where some future act is to be done: as where an agreement is made to build a house in six months; or to do an act on or before some future day; or to lend money upon a certain interest payable at a future time. [WARFARE, ITS EFFECTS ON INS. CONTRACTS.]

EXECUTORY DEVISE.—A limited estate which may be created by a testator, and which does not fall within any of the ordinary tenures.

EXECUTORY ESTATES.—Interests which depend for their enjoyment upon some subsequent event or contingency.

EXECUTORY REMAINDER.—A contingent remainder, because no present interest passes.

EXECUTORY REPRESENTATIONS.—SEE REPRESENTATIONS.

EXECUTRIX.—A woman appointed by a testator to perform his will.

EXEMPLARY DAMAGES.—Damages assessed on a liberal, unsparing scale.

EXEMPTION.—The exemption of life prems. (within certain limitations) from income-tax will be explained under INCOME-TAX.

The exemption of pol. effected by married men for the benefit of their wives and families under the Married Women's Property Act, 1870, from the debts and engagements of the husband, will be set forth under MARRIED WOMEN, LIFE INS. FOR.

The exemptions in favour of life pol. in the various States of the U.S. will be set forth under PROTECTION OF LIFE POL.

EXERTCITO NAVIS.—The temporary owner or charterer of a ship.

EXETER.—A beautiful city in the West of England, said to have been founded by the Romans; and for a considerable period the capital of the West Saxon Kingdom. Measures were taken at a very early period to protect this city from fire. In 1472 a night bellman was employed to alarm the inhabitants in case of fire; and in 1558 leathern buckets, ladders, and crooks were ordered to be provided. It is said that at a later period an Act was passed prohibiting *thatched roofs;* of this we do not find any trace. A provision to that effect was prob. included in one of the paving and lighting acts hereinafter referred to. In 1694 water works were estab. In 1760 was passed the 1 Geo. III. c. xxviii.—*An Act for Enlightening the Streets within the City of Exeter and Suburbs thereof.* In 1860 this Act was amended, and provisions added "for the better Regulation of the Watch within the said City, and for otherwise improving the same." In 1807 the *West of England* Fire and Life Ins. Co. was founded. In 1831 the *Western Annu.* So. was estab. On 2 Aug. 1844, a fire of some magnitude occurred, destroying some 20 houses. On 26 April, 1847, another considerable fire occurred. There is no doubt that the early watch estab. saved the city from the ravages to which many other of the early thatched cities were subjected.

EXHALATION.—The vapours which arise from animal and vegetable bodies, marshes, the earth, etc. [EFFLUVIA.]

EXHAUSTED POLICY (Fire).—A pol. which has contributed either by itself, or in conjunction with other contributing pol., to the full measure of its liability in regard to the risk covered. It may occur that the ins. by a compound pol. may be exhausted upon some one or more of its items, and not upon all. [FIRE INS. PRACTICE.]

EXHIBIT.—In Law any paper produced in a Court of Law or Equity; or referred to in affidavits and certified.

EXITUS.—1. Children; offspring. 2. The rents, issues, and profits of lands and tenements. 3. The conclusion of the pleadings.

EXOMPHALOS.—A hernia or rupture at or near the navel.

EXOTERIC.—A term applied to an effect produced by a cause external to, and independent of, the system. The opposite of *Esoteric*.

EXPECTANCY.—Executory; relating to something in the future.

EXPECTANT.—Depending on the future; arising out of probability, mathematical or otherwise.

EXPECTANT ESTATES.—Interests to come into possession and be enjoyed *in future.* They are of two sorts at Common Law—*reversions* and *remainders*.

EXPECTATION.—This word has several significations in relation to Ins. In the Doctrine of Chances, it is applied to any contingent event on the happening of which some benefit is expected. This is capable of being reduced to the rules of computation: for a sum of money in expectancy when a particular event happens has a determinate value before that event happens. [CHANCES, DOCTRINE OF.] [PROBABILITY, MATHEMATICAL THEORY OF.] In regard to Ins. contracts, "Expectation" is sometimes used in the sense of an opinion or belief, and may influence the judgment of the underwriter in the acceptance of a risk. Where an honest statement of an expectation, opinion, or belief, has been made, even although it turns out unfounded, it will not invalidate a contract; but if made with an intention to deceive, it will do so. The points arising hereunder will be reviewed under REPRESENTATIONS. A mere possibility or expectation cannot be insured.—*Bonney.*

EXPECTATION OF LIFE.—This term is used in connexion with Ins. topics to express the expected duration, after any specified age, according to a given T. of mort. It is the mean number of future years which individuals exposed to obs. have been found, and therefore may be expected, one with another, to live. The term is a technical one, as may be learned from the fact that it differs altogether, in scientific meaning, from the term *probable life*, which is ascertained in the manner described under EQUATION OF LIFE.

This apparent confusion of ideas has led some writers to object to the term "Expectation of Life" as inapplicable to practical purposes. We propose to pass in review the main authorities on the point. The reader may test for himself the differing results obtained from the same Mort. T. by the processes described.

De Moivre was, we believe, the first who applied this term. In his *Essay upon Annuities*, 1725, he says:

> The expectation of life is that duration which may be justly expected from a life of a given age; and is properly a medium between the longer and shorter durations of a great number of preceding lives, from the time of their having attained the age given to the time of their extinction. With the *present value* of this expectation, the proprietor of a life may be said in some sense to have purchased an annuity for life, of which the rent is paid him in actual duration, and thereby to have taken his chance of an uncertain duration as an equivalent for that *fixt* duration he is entitled to by the right of his expectation.

For the hypothesis which he employed to determine the expec. of life, see DE MOIVRE'S HYPOTHESIS.

Mr. Weyman Lee, in his *Essay on Leases*, pub. anonymously 1737, fell into great confusion from want of the necessary scientific knowledge to distinguish between "expec. of life" and "prob. of life," in the manner we have already explained.

Mr. Thomas Simpson, in his *Select Exercises*, 1752, said:

> By the expectation or share of life is not here to be understood that particular period which a person hath an equal chance of surviving; this last being a different and more simple consideration. The expectation of a life (to put it in the most familiar light) may be taken as the number of years at which the purchase of an annu. granted thereon, without discount of money, ought to be valued. Which number of years will differ more or less from the period above mention'd, according to the different degrees of mort. to which the several stages of life are incident. Thus it is much more than an equal chance, according to the T. of the prob. of life [London, T. of Mort. for; *Simpson's*, 1752], that an infant just come into the world arrived not at the age of 10 years; yet the expectation or share of life due to it upon an average is near 20 years. The reason of which wide difference is the great excess of the prob. of mort. in the first tender years of life, above that respecting the more mature and stronger ages. If the numbers that die at every age were to be the same, the two quantities above specified would also be equal; but when the said numbers become continually less and less, the expectation must, consequently, be the greater of the two.

It was this author who first arranged a T. of expectations, which was given in the preceding work.

In 1769 there appeared in *Phil. Trans.* from the pen of Dr. Price: *Observations on the Expectation of Lives*, wherein he says:

> No competent judgment can be formed of the following obs., without a clear notion of what the writers on Life Annu. and Rev. have called the *Expec. of Life*. Perhaps this is not properly understood; and Mr. De Moivre's manner of expressing himself about it is very liable to be mistaken. The most obvious sense of the expec. of a given life is: "That particular number of years which a life of a given age has an equal chance of enjoying." This is the time that a person may reasonably expect to live: for the chances against his living longer are greater than those for it; and therefore he cannot entertain an expectation of living longer, consistently with prob. This period does not coincide with what the writers on annu. call the "Expec. of Life," except upon the supposition of an uniform decrease in the prob. of life, as Mr. Simpson has observed [in the passage already quoted]. . . . It is necessary to add that, even on this supposition, it does not coincide with what is called the "Expec. of Life" in any case of joint lives. . . .

This he proceeds to explain. We need not follow him.

Dr. Price originated the following hypothesis, with a view to determine the pop. of any given place from the B. of Mort. of that place. The births and deaths being equal, *the number of ann. births multiplied by the* Expectation *of a child just born will be the number of inhabitants.*

Hutton, in his *Mathematical Dict.* 1796, says: "Expectation of Life in the doctrine of L. Annu. is the share or number of years of life, which a person of a given age may, upon an equality of chance, expect to live."

Mr. Milne, in his *Treatise on the Valuation of Annu. and Assu.* 1815, speaks of the expec. of life as "the whole time which each of them may, at present, reasonably expect to survive, . . . and it is the same with the mean duration of such lives after that age."

In his art. "Mort., Human," in the *Encyclo. Brit.*, the same author speaks of it as "the portion of future existence which an individual at that age may reasonably expect to enjoy"; and he lays down the following propositions:

> If the number constantly living at all ages be divided by the number of ann. births, the quotient will be the mean duration of life from birth, or the expec. of life of a child just born.
>
> Hence also it appears that the number of years of expec. of life at any age is the same as the number of living persons at that age and upwards, *out of which one dies ann.*

Mr. Robert Rankin, in his carefully written *Treatise on Life Ins. and Annu.* 1830, says:

> The Expec. of Life is a term frequently used without a proper understanding of its meaning. It is popularly supposed to express the period for which a man may rationally expect to live, whereas it very seldom coincides with it. A man may very rationally expect to live to that term which he has an equal chance of attaining, or at which the number of his contemporaries will be reduced to one-half; but this expec., or the average duration of lives of his standing, may differ widely from such term, and is in fact found to exceed it almost universally; the reason is that the lives of some among the latter half will probably exceed the period of equal division, much more than any of the former half fall short of it, thus enhancing the average duration of lives of the given age, which is properly enough termed the expec.

Dr. Southwood Smith, in his *Philosophy of Health*, 1836, writing of the expec. of life, says:

> It is important to bear in mind that several expressions in common use have a signification perfectly synonymous with this: namely, *share of existence*, *mean duration of life*, etc. By these terms is expressed the total number of years, including also the fractional part of a year, ordinarily attained by human beings from and after any given age. Suppose, for example, that 1000 persons enter on the 86th year of their age: suppose the number of years and days which each one of them lives afterwards be observed, and recorded; suppose the number ultimately attained by each be formed into a sum total; suppose this total be divided equally among the 1000: the quotient of this division is said to be each one's *share of existence*, or his *mean duration of life*, or his *expec. of life*. Thus of the 1000 persons in the present case supposed to commence the age of 85, suppose the number of years they collectively attain amount to 3500 years: the one-thousandth part of the 3500 is 3½: three years and a half then is said to be the expec. of life at the age of 85, because, of all the persons originally starting, this is the equal share of existence that falls to the lot of each.

Mr. Jenkin Jones, in his *New Rate of Mort.*, etc., 1843, says:

> By the Expec. of Life is meant the average number of years that a person, at any age, may yet expect to live, taking one life with another. For example, a person aged 30, according to the

experience amongst assured lives, may expect to live 34½ years nearly, or in other words, he may expect to attain the age of 64½ years nearly.

The total existence enjoyed in any one year by the number of persons alive at any age at the expiration of one year, will manifestly be as many years as there are persons who survive the year, added to the existence enjoyed by those who die within the year. And of those who die within the year, it is prob. that as many die at equal intervals during the first half year, as die at the same intervals during the last half of the year, or, in other words, that of those who die in any one year, taking one life with another, it may fairly be assumed that, upon an average, they each enjoy one half year's existence—therefore, the total existence enjoyed at the expiration of a year, by those alive at any given age at the beginning of the year, is equal in number to those who survive the year, plus one-half of those who died within the year.

Dr. Farr, in the 6th Rep. of Reg.-Gen. 1845, says:

> This expression is generally found embarrassing to beginners in statistics, who are naturally inclined to suppose that the *Expec. of Life*, is the time which it is *prob.* that a child will live or that he may *expect* to live. The term "Expec. of Life" is therefore ambiguous; and may be replaced by *mean lifetime*, which with "probable lifetime" may very well supply the place of *vie moyenne* and *vie probable* borrowed from the French.

Mr. F. G. P. Neison, in a paper read before the Statistical So. in 1845, *Contributions to Vital Statistics* [which paper formed the nucleus of his subsequent work bearing the same title], said:

> For many purposes, the mode of representing the value of life at various ages under the expression "Expec. of Life" will be found inadequate. The method by which that value is obtained for a given age involves the consideration of the decrements of life at every superior age; and therefore in my T. the expec. of life even at younger ages will be affected by the irregularities of mort. at the older ages. It consequently sometimes happens that a comparison of different T., especially at the younger and middle periods of life, may show an equal, or nearly equal expec., while there are in reality very different chances under the two T. of living a given number of years; and again Expec. T. may show very different values for the same age, when, according to the nature of the data, there are equal chances of living a given number of years.
>
> From what has been said it will be seen, that although the "Expec. of Life" expresses the true average duration in years of a certain number of individuals at a given age, yet it does not represent the chances of surviving an equivalent number of years; and consequently for medical and other purposes, in which it is required to determine the relative value, improvement or other change which may have taken place within a given period of life, another expression must be found. . . .

He then suggests the term "Equation of Life" as affording a better method of comparison.—See EQUATION OF LIFE.

In the 8th Rep. of Reg.-Gen. Dr. Farr returns to, and enlarges upon, the expression as follows:

> *Expectation of Life* is an incorrect term: the time which it is *expected* a person will live is the time which it is an even chance he will live; it is the *vie probable* of the French, and is correctly expressed by "probable lifetime." The after-lifetime can only be the same as the probable lifetime on De Moivre's hypothesis—that the surviving form an arithmetical progression. The expression "Expec. of Live," first used by De Moivre, is correct on that supposition, which is, however, in itself quite erroneous. The idea intended to be expressed by "Expectation of Life" is the *mean time* which a number of persons of any instant of age will live after that instant: it is the French *vie moyenne*; and this technical idea is strictly and shortly expressed by *after-lifetime*, a pure English word, formed on the same analogy as *after-life*, *after-times*, *after-age*, *after-hours*. "All of a tenor was their *after-life*."—Dryden.

Mr. Peter Gray, in his *Life Contingencies*, etc., 1849, says (sec. 161):

> The function, with the consideration of which we have been occupied, is that which usually receives the appellation of the Expec. of Life. This appellation it seems to have derived from its being the sum of the prob. of the life or combination of lives that may be in question, living over one year, two years, three years, etc., to the greatest tabular duration of that life or combination of lives. Viewed in this light—as the sum of a series of prob.—the function may, perhaps, with some show of propriety, receive the appellation to which reference has just been made. But the sense in which the term expec. is frequently received, and the manner in which the function it designates is spoken of, and even defined, by writers on life contin., receives no countenance from the nature or the mode of derivation of that function.
>
> Of the prevalent misconceptions on this subject, one is, that the "Expec." at a specified age, considered as a term of years, is more likely than any other term to be the actual duration of that life; and another is that it denotes a term of years which the life in question is as likely to survive as not. Neither of these notions is correct. The first would imply that the year in which a life is most likely to fail is that in which its "Expec." terminates. But the year in which this event is most likely to happen is obviously that succeeding the attainment of the age opposite which the Mort. T. shows the greatest number of deaths. Thus, by the *Carlisle* T., after the 4th year, more deaths take place in the 75th year than in any other. In this year, therefore, a life of any age, from 4 to 74 inclusive, is by this T. more likely to fail than in any other single year that can be named; while the actual expec. of but few of those intermediate ages will be found to terminate in their 75th year.
>
> The second notion designates, not the "Expec.," but the term (called by French writers *la vie probable*) during which the number of lives of the age given is reduced one-half. This term does not usually differ much from the true expec.; and on De Moivre's hypothesis, of a uniform distribution of deaths, from amongst the number living at a given age, over the whole period of future existence, it actually coincides with it. Still, as this hypothesis is in accordance with no T. exhibiting the results of actual obs., deductions from it cannot be received as true exponents of the law of mort.
>
> These and other notions equally unfounded, which are entertained by many in reference to the mean duration of life, have, no doubt, their origin in the name "Expec. of Life," by which this function is usually designated, and in the manner in which it is spoken of by writers on the subject. . . .

He then proceeds to criticize Simpson, Milne, and later writers, on the errors and discrepancies into which they had fallen in the use or definition of this term. It is not necessary to follow him here.

In 1857 the late Mr. Charles A. M. Willich read before the British Asso. a paper *On the Expectation of Life*. [This paper will be found in the *Assu. Mag.* vol. vii. p. 181.] The writer contends that no law had "hitherto been discovered, by which a correct T.

of Mort. could be constructed;" but, assuming the *Carlisle* T. to be accepted as "a nearer approximation to the actual duration of human life than any other T. of Mort. hitherto in use," he shows how, by a simple hypothesis, the expectation of life may be obtained "almost identical with Milne's T. for a long series of years, up to the age of 60"—that is: deduct the present age from the fixed arbitrary number 86: and *two-thirds of the difference gives the expec.* He considers, however, that the different groups of lives existing at the ages 5, 60, and 74, "fall under different laws;" and hence he varies the expressions of his formula in corresponding degrees, viz. from age 5 to 60, deduct the present age from the fixed number 81½, and *two-thirds of the difference is the expec.*; from age 60 to 74, deduct present age from the fixed number 81⅔, and *half the difference is the expec.*; from age 74 to 90, deduct the present age from the fixed number 103, and *one-fourth of the difference is the expec.*

He furnishes a T. worked out on this hypothesis for each year from 5 to 90, and compared with the expec. by the *Carlisle* T. We must be content with the annexed quinquennial abstract thereof:

Age.	By *Carlisle* T. of Mort.	By the Proposed Hypothesis.
	Yrs. Prts.	Yrs. Prts.
5	51·25	51·00
10	48·82	47·66
15	45·00	44·33
20	41·46	41·00
25	37·86	37·66
30	34·34	34·33
35	31·00	31·00
40	27·61	27·66
45	24·46	24·33
50	21·11	21·00
55	17·58	17·66
60	14·34	14·33
65	11·79	11·83
70	9·18	9·33
75	7·01	7·00
80	5·51	5·75
85	4·12	4·50
90	3·28	3·25

In vol. vii. of *Assu. Mag.* (1858) a *Formula for approximating to the Expec. of Life* is given by Mr. W. D. Biden, yielding an even closer approximation to the *Carlisle* T.

In 1859 Mr. Charles A. M. Willich read before the Inst. of Act. a paper: *On a Formula giving the Expectation of Life approximatively*, wherein he applies a similar hypothesis to that previously noticed to the *English* Life T. No. 2. Here, between the ages 5 and 60, he deducts the present age from the fixed number 80, and *two-thirds of the difference is the expec.* We give the annexed quinquennial example:

Age.	By *English* T. No. 2, Males.	By Proposed Hypothesis.
	Years.	Years.
5	50·21	50·00
10	47·47	46·66
15	43·62	43·33
20	39·99	40·00
25	36·60	36·66
30	33·21	33·33
35	29·82	30·00
40	26·46	26·66
45	23·13	23·33
50	19·87	20·00
55	16·66	16·66
60	13·60	13·33

Mr. W. E. Brabrook, in an able letter to the *Assu. Mag.* 1863 [vol. x. page 350], on the Insurance of Diseased Lives, says: "Reflection will show that the term Expec. of Life means nothing whatever. . . . It is merely an arithmetical result."

Mr. T. B. Sprague, M.A., in a paper *On the Limitation of Risks*, etc., read before the Institute of Actuaries in 1866, and pub. in *Assu. Mag.* xiii. p. 20, says:

> It will be noticed that the "Expec. of Loss" is analogous to the "Expec. of Life at a given age," called by some writers the "mean duration of life." The "most prob. loss" is analogous to the "most prob. duration of life"—that term of years which is more likely than any other to be the duration of life. This is not the same as the term of years (called by French writers "*la vie probable*") which it is as likely as not that a given person will survive. . . . To take an example: By the *Carlisle* T., a person of the age of 30 has an "Expec. of Life" equal to 34·34 years. But since, according to the *Carlisle* T., more persons over the age of 4 die at the age of 74 than at any other age, the "most prob. duration of life" is 44·5 years. Again; since of the persons living at the age of 30, one-half attain the age of 66, but not 67, it follows that the time which a person of 30 years of age has an even chance of surviving is a little over 36 years.

The Expec. of Life, according to any particular Mort T., is deduced by simple process from the T., as orig. constructed. For convenience of reference, we have given the expec. col. as part of each Mort. T., and shall continue to do so throughout the remainder of the work. In the Supplement we shall bring together all the expec. cols. into one T., in view of affording greater facilities for comparison.

There can be no doubt that these cols. of expec. constitute the chief element of interest to non-professional readers. In these each one sees what he supposes to be his prob. span of participation in the pleasures and cares of life; and, perhaps, the tendency is rather to cause a disregard of the chances of early death.

For those who consult these cols. for more practical purposes, the following add. notes are appended.

Dr. Adams Allen, in his *Medical Examinations for Life Insurance*, 1869, speaking in regard to the use to be made of an Expec. T. by medical officers, offers the following suggestive obs.:

> It should be recollected that, in individual cases, the Expec. of Life may be increased by passing beyond certain ages—a fact wholly ignored by the T. Thus, for example, where there is clearly an hereditary tendency to phthisis—when parents, or brothers, or sisters, have died of the disease before

25 or 30, and the party has lived, and is now in good health, at the age of 40 half the danger may be said to have passed; at 50, three-fourths, or four-fifths; and at 60, but a mere modicum remains—certainly not over one-fifteenth or twentieth; if, indeed, it may be said to exist beyond that of other persons without hereditary predisposition of any sort. On the contrary, the tendency to gout, urinary diseases, insanity, apoplexy, paralysis, etc., increases with the progress of declining years. It is safe to say that, when T. indicate a progressive diminution of the life expec., this idea should be modified and corrected by a full understanding of the hereditary, constitutional, or acquired tendency to, or relief from, special forms of disease.

In the lectures by Mr. W. Sutton, B.A., to the students of the Inst. of Act. 1872 [pub. in *Assu. Mag.* vol. xvi. p. 434], there occur the following passages:

> Now, although, as a matter of theory, the meaning of the term Expec. of Life at any age is a perfectly simple matter, yet, from various causes, this phrase has been the source of endless confusion.
>
> The first confusion has been to consider the expec. as the number of years which it is prob. that a person of the age *x* will live. . . .
>
> Another misuse of the term Expec. of Life arises thus: Suppose that the average duration of human existence in England, in the year 1840, was found to be 34 years, and in 1860, to be 32 years—in other words, that the expec. of life at the age 0, or birth, had decreased 2 years during that interval of 20 years, what conclusion can we draw from this result, as to the relative longevity of the inhabitants of the country at the two epochs? Clearly none whatever, unless we know the proportion between the numbers living at each age of the two epochs. And yet, over and over again, results of this kind are quoted to show that certain countries are declining in material prosperity and physical vigour, or the reverse.
>
> Another blunder into which this phrase Expec. of Life has led—and I am afraid still leads—many persons, has to do with the application of Mort. T. to pecuniary matters. Few persons, except actuaries, can see why an annu. on a man's life is not the same thing as an annu. certain for a term of years equal to his expec. of life as given by the Mort. T. employed; and although this mistake has been repeatedly corrected, it is over and over again misleading some one. . . .

It may be necessary to add that the Expec. of Life varies with different *Localities*; this will be spoken of under Locality, Influence of. Also with different *Occupations*; this will be spoken of under Occupations, Influence of.

[After Lifetime]. [Equation of Life.] [Mean Lifetime.] [Prob. of Life.]

EXPECTATION of Loss.—A technical term applied by Mr. Sprague to the investigation of the affairs of Ins. Asso. It comprehends not only the number of contingencies which may occur, but the prob. pecuniary result, which has to be estimated with due regard to the maximum amount retained on any single risk. It is "the loss which it is an even chance that the claims of the year will not fall short of."—See Expected Mort.; Limitation of Risks.

EXPECTED Losses, Ins. of.—All Ins. may be said to be more or less in view of expected losses; certainly of prob. losses. But a pol. of Marine Ins. against all "Expected Losses" would be a contract of a very undefined character, and would embrace, for instance, the risk of damages that a shipowner might become liable to pay in consequence of his ship running down another. It was thought in *Delanoy* v. *Stoddart*, before the Common Pleas, 1814, that such an ins. would be illegal. But by the *Merchant Shipping Act Amendment Act*, 1862 [25 & 26 Vict. c. 63], secs. 54 and 55, such ins. are now rendered legal. The precise limits of the risk undertaken should, however, be specified; for, if not, serious questions may arise. See *Taylor and others* v. *Dewar*, 1864 (33 L. J., Q. B., p. 141). Such a pol., too, might be held to cover loss on exchange; and many other risks outside ordin. pol. of this class. So with F. pol. In fact the nature of the "Expected Losses" must be in some measure defined; or the payment will only be made according to the usage incident to the particular branch of ins. in question. [Marine Ins., Practice of.]

EXPECTED Mort.—Any life office may now with comparative ease estimate its expected mort., by means of the col. inserted in nearly all Life T. of modern construction: "Prob. of dying within one year"—that is, the prob. of any person of a given age dying during the next succeeding year of age. Multiply the prob. at each age by the number of pol. on lives existing at that age; and the result gives the number of lives that ought to die out of those existing at the beginning of the year. The result will want some correcting, on the one hand, in regard to pol. which may lapse or be surrendered, on the other, in regard to new entrants during the year. But these points are well understood by all modern actuaries. The final result, multiplied by the average amount of the pol. in the office, should furnish the approximate amount of the "Expected Claims" during the year. There is, however, always the contingency that the mort. of any one year may fall upon large pol., or the reverse. [Expectation of Loss.] [Limitation of Risk.]

EXPECTED Profits, Ins. of.—Expected profits may be insured in the U. K., in the U. S., in Holland, and in some other continental countries; but not in France, where it is laid down that only an acquired profit may be insured. But in order to except such insurances from the operation of the law against Gambling Ins., it is necessary that the insured have an interest in the property out of which the profits are expected to proceed; and the risk must be properly defined as on expected profits. It has been further held in several cases, and especially laid down in *Chope* v. *Reynolds*, 1859, that where such profits are ins. against the perils of the sea, the liability of the underwriters does not attach, unless the profits themselves are lost by the perils insured against. A few cases will make this plain.

In *Henricksen* v. *Margetson*, 1776, the pol. was from Bordeaux to Hamburg, on indigo valued at £9600, under which pol. was a memorandum, "the following is on imaginary profit at 3½ p.c., and in case of loss to pay without further proof of interest than this pol." The plaintiff stated that the "imaginary profit" named in the memorandum was understood and meant to be the profit which the said cargo of indigo would produce upon the sale thereof at Hamburg if the same should arrive there in safety ; that the cargo was on board to the value insured ; that he was interested in the cargo and its imaginary profit ; that the ship and cargo were lost on the voyage by the perils of the sea ; and that the cargo and profit were wholly lost to him. The case was tried before Lord Mansfield, and was determined in favour of the plaintiff. An application for a new trial was refused by the Court.

In *Webster* v. *De Tastet*, 1797, it was *held*, that where a mate, or a sailor, is to receive something at the end of the voyage in lieu of wages, *e.g.* slaves, he cannot insure it ; nor can he recover the value of such thing in an action against his agent for negligence in not causing such an ins. [7 T. R. 157.] This is on the well-known principle, peculiar to nearly all maritime codes, that a seaman cannot ins. his wages.

In 1798 arose the great case of *Craufurd* v. *Hunter*, known generally as the "case of the Dutch ships," in which various points regarding the ins. of expected profits were involved. This case, which was before the Courts for some years, we shall have to deal with as a leading one under INSURABLE INTEREST.

In *Hodgson* v. *Glover*, 1805, upon an ins. on profits valued at £400, the plaintiff declared as for a total loss, and it appeared that after the shipwreck, by which many of the slaves. on the profits of whom the ins. was made, were lost, but the remainder reached the market, and were there sold ; and it did not appear what profit was made on them, or whether, if all had arrived, any profit would have been made ; though it was found that the produce of those who were sold did not give a profit upon the whole adventure :—*Held*, that the plaintiff was not entitled to recover. *Note.*—The whole adventure was a voyage from Liverpool to Africa, and from thence to the West Indies ; but the profits were only ins. from St. Vincents (after the ship arrived there) to her last port of discharge in the West Indies. [6 East, 316.]

In the case of *Routh* v. *Thompson*, 1809, where the captors of a vessel (being the officers and crew of one of His Britannic Majesty's ships) insured an interest in the captured vessel before any adjudication by a Prize Court had been made, and where the captors had no claim to prize under the Prize Acts, Lord Ellenborough laid it down that the captors had no insurable interest, as they could claim nothing of right, but only *ex gratia* of the Crown ; adding, tersely, "a man has no right to an indemnity because he has lost the chance to receive a gift." [11 East, 426.]

It was held in *Eyre* v. *Glover*, 1812, that ins. may be made on profits generally, without more description, and engrafted on a pol. on ship and goods, in the common printed form for a certain voyage ; with a return of prem. for short interest ; the insured proving an interest in the cargo. [16 East, 218 ; 3 Camp. 276.]

In *Devaux* v. *Steele*, 1840, the circumstances were as follow. The French Law provides that "the vessel which shall have fished, either in the Pacific by doubling Cape Horn, or by passing through the Straits of Magellan, or to the south of Cape Horn, at 62 degrees of latitude at the least, shall obtain on its return a supplemental bounty, if it brings back in the produce of its fishing one-half at least of its burthen, or if it can prove a navigation of 16 months at least :"—*Held*, 1. That a vessel which had caught fish to the amount of half its burthen in the Atlantic, then doubled Cape Horn and fished without success, and was lost within 16 months after setting sail, had not complied with the conditions of the law, so as to be entitled to the bounty. 2. That the practice of the French Law to allow the bounty under such circumstances was a mere matter of expectation, and did not constitute a vested interest which could be the subject of ins. [8 Scott, 637 ; 6 Bing. N. C. 358.]

In *Royal Exchange* Ins. Corp. v. *M'Swiney*, 1850, the facts were as follow. M'Swiney agreed to buy 6000 bags of rice, supposed to have been shipped at Madras on board the E. B., to arrive on or before the end of May, and guaranteed equal to samples, at 19*s.* p. cwt. He agreed to sell the same 600 bags at 20*s.* 6*d.* p. cwt. on the like terms ; that he had just reason to expect by reason of the contracts and the arrival of the rice to make a profit of £675 ; and thereupon caused a pol. to be effected "on profit on rice laden or to be loaden on board the E. B. at and from Madras, beginning the adventure on the goods and merchandizes from and immediately following the loading thereof on board the ship at Madras." When the E. B. was at Madras ready to receive the 6000 bags on board, which were lying ready to be shipped, and when 1200 bags had been put on board, she was blown out to sea, and so damaged that the 1200 bags were spoiled, and she was prevented from taking on board the remaining 4800 bags, which were sent to Lond. in another ship and arrived in June. The E. B., having been repaired, arrived in Lond. in Nov. The Ins. Co. paid M'Swiney for the loss of profit on the 1200 bags, but refused to pay anything for the loss of profit on the 4800 bags :—*Held*, in the Exchequer Chamber:

1. That M'Swiney had an insurable interest in the expected profit on the rice, and might, by a pol. adapted to the case, have insured that special interest from the time that the rice was appropriated by the vendors and ready to be shipped at Madras, against any of the events by which it might be defeated, viz. loss of the ship, or the whole of the rice, or part of the rice, or the delay of the voyage.

2. That according to the meaning of the pol. M'Swiney ins. the ordinary profit on rice, and only against losses by perils of the sea directly affecting the rice, and consequently the profits on the rice; and therefore the pol. attached only on such rice as was actually put on board.

3. That if the pol. attached to the profit of the rice on shore, there had been no loss of that profit [on the 4800 bags] by perils of the seas, but only a retardation of the voyage, which was not ins. against by the pol. [14 Q. B. 634; 19 L. J., Q. B., 222.]

In *Chope* v. *Reynolds*, 1859, A bought goods of B, to arrive at Bristol by the ship *James Daly* from the West Coast of Africa, and effected an ins. with C against the ordinary perils, with a memorandum indorsed on the pol. declaring the ins. to be "on profit in palm-oil valued at the rate of 3 guineas p.c. per *James Daly*." The *James Daly* while on her voyage to Bristol, with the oil on board, was lost by a peril insured against, but the oil was brought home undamaged by another vessel, and was sold by B to a third person:—*Held*, that there had been no such loss of the subject-matter of ins. as was contemplated by the pol. [5 C. B., N. S., 642; 28 L. J., C. P., 194.]

Mr. May, in his excellent *Law of Ins.*, 1873, gives us, on the authority of *French* v. *Hope Ins. Co.* (a case which we have not yet seen), the law as it stands in the U.S.:

> Such expected profits are still insurable though the insured may have no absolute ownership in the property out of which the profits are expected to arise, but merely a right, if he should so elect, to take it on certain terms and conditions, in a certain event; as where one purchases for a consideration, then paid, the right to take a portion of a cargo expected to arrive, on the payment of a certain further sum, if on the arrival he shall so elect.

Referring to the exception we have mentioned at the commencement of this art. in regard to *France*, where the rule is held to be, that not an expected, but only an acquired interest can be ins., it seems necessary to point out the ins. of crops against the risks of frosts, hail, floods, and other risks of this class, is very general in that country; and these, as we have seen, properly come under the designation of expected profits; but there is this conformity with the general rule even here, that the insured has an interest in the property out of which the profits are to proceed. We may consider with advantage what a modern French writer, *Alauzet*, 1844, says upon the subject:

> It is not necessary to the validity of the contract that the thing exist, and that the interest be born at the moment of the making of the contract. Thus, crops may be validly insured against hail and frost, or any other risk, even before they are sown; but from the moment when the crop begins to take root or bunch, the contract will be perfect and susceptible of execution. Until then it is only a conditional ins.

In this way the practice is made to conform to the general requirements of the law.

[Gambling Ins.] [Insurable Int.] [Interest or no Int.] [Profits, Ins. of.] [Valued Pol.]

EXPECTORATION.—The act of ejecting matters from the chest. The term is sometimes applied to the matter ejected, which is, however, more properly termed *sputum*.—*Brande.*

EXPENSES for Ship's Use.—General average losses are divided into two great classes:—1. Those which arise from sacrifices of part of the ship, or part of the cargo, purposely made in order to save the whole adventure from perishing. 2. Those which arise out of extraordinary expenses incurred for the joint benefit of both ship and cargo. Mr. Arnould points out that there are two main questions which determine whether any given expenditure ought to found a claim to contribution in gen. average: 1. Was it of an extraordinary nature? In other words, was it anything more than those ordinary disbursements of the voyage which are necessary for keeping the ship in a proper condition to transport the cargo, and which the owner of the goods has therefore a right to demand of the owner of the ship, without being called on to contribute towards their payment? 2. Even supposing the expenditure to have been of an extraordinary nature, was it also incurred for the joint benefit of both ship and cargo? If the answer to both these questions be in the affirmative, the expenditure ought, on principle, to be made good to the party who has incurred it by those who have benefited by it; in other words, should be regarded as a gen. average loss. If in the negative, then the expenditure either comes under the head of those petty averages which the shipowner himself must bear without any claim on his underwriter, or it constitutes a particular average loss, for which the underwriter on the ship, or on the freight, is liable. He amplifies these deductions as follows:

> From these principles it follows that, where a ship has either cut away her masts or rigging, or has been so damaged by a storm that it is necessary, for the safety of both ship and cargo, to put into a port of distress for repairs, all the expenses inseparably connected with the act of first putting into, and afterwards clearing out of, such a port of distress give the shipowner a claim to a general average contribution; and this upon the plain ground that these expenses are a necessary consequence of an extraordinary measure taken for the general preservation.
>
> This includes port dues and charges, and sums paid in remuneration of services rendered in bringing the ship into port, and in clearing her out again, pilotage, towage of a disabled ship into a port of distress, charges of taking off anchors and cables, and rendering assistance generally, wages of people employed to guard property during the repairs, or of cutting a way for the ship through the ice when she has become frozen up in a port of distress, and all charges of a similar kind.

But none of these charges can be allowed in gen. average, when the ship puts in merely in consequence of contrary winds, or for the purpose of procuring water and provisions. In such cases they fall under the head of petty averages, and are borne by the shipowner alone. But there is yet another class of expenses which come within gen. average, and which Arnould enumerates as follows:

> All the expenses necessarily incurred in preparing for the refitment of the ship in the port of distress. Thus, when, in order to repair the ship, it becomes absolutely necessary to dischage the cargo, all the expense of unloading, warehousing, and re-loading it, comes into general average, because incurred for the joint benefit both of the ship and the cargo, that it may be preserved. Yet it is only when these charges are necessarily incurred for the sake of the ship, as well as of the cargo, that they can be allowed to give claim to contribution. If the cargo were merely unloaded in order to preserve it, in cases where the ship might have been equally well repaired without its removal, the expense thus caused would not constitute a general average claim.
>
> So the charge of removing the ship's stores, after the cargo is out of her, is not allowed to give such claim, being an expense incurred for the sake of the ship only. . . .

He adds:

> All the expenses attendant upon raising money abroad for gen. average purposes ought, on principle, to be made good by a gen. average contribution, including exchange, int. or discount on bills, and the maritime int. in case of bottomry; but, contrary to the opinion of Mr. Benecke, not the prems. paid for ins. on sums thus advanced for gen. average purposes.

The subject will be again spoken of under GEN. AVERAGE.

EXPENSES OF EXTINGUISHING FIRES.—See FIRE EXTINGUISHMENT, EXPENSES OF.

EXPENSES OF MANAGEMENT OF INS. ASSO.—From time to time this question comes prominently to the front; but never did it engage more serious attention than in the year 1874, when many of the leading authorities upon Ins. practice freely expressed their views concerning it. We have, indeed, no intention of following these learned authorities into details; for it is but too obvious that their opinions, so far from being impartial, are generally warped, more or less, to suit the circumstances of the particular asso. whose destinies are, for the time being, in their keeping. Indeed this could hardly be otherwise. A few general principles may aid to guide us to practical conclusions; and these will apply to ins. asso. of all classes; although it is to life ins. asso. more particularly that the interest and importance of the question may be said to attach.

In the early years of ins. asso. the question is one rather for the share- than the pol.-holders. A certain expenditure has to be incurred before any bus. can be transacted; and a certain add. expenditure must be incurred in bringing up the business to paying proportions. The limit of the expenditure in building up the bus. should be such that the future profits on the bus. obtained may not only bear the burden of current expenses when the cap. account shall be closed, but will contribute to the replacement of the cap. expended in the foundation. If this be not so, then the enterprise must be regarded as a failure.

There are in practice two classes of asso. which present different aspects in regard to the effect of foundation expenses upon them:—1. Mutual. 2. Proprietary.

1. *Mutual Asso.*—The *theory* of a mut. ins. asso. is that all expenditure has to be borne by the prems.; and the pol.-holders agree to the depreciation of the amount, and therefore the security, of the accumulated fund in the earlier years, for the sake of participating in the full profits of the enterprise at a later period. In *practice* no mut. ins. asso. is now attempted to be formed without the aid of a guarantee cap., in some shape, to take the burden of the foundation expenses; and this of course has to be repaid out of the profits of future trading. Until that be done, the mut. feature, as ordinarily understood, does not come into play.

2. *Proprietary Cos.*—In founding a proprietary ins. co. the shareholders are supposed to understand that it is their capital which must be at stake in the experiment. It will be necessary to expend a portion of this, not only in the orig. foundation, but in building up a bus. which is thereafter, if successful, to be self-sustaining; and something more, viz. it will have to defray all current expenses, and contribute gradually to the replacement of the cap. orig. expended; and while all this is going on, the pol.-holders must be kept safe, at the risk of the shareholders. In a word, so much of the prems. received must be retained as will provide the necessary ins. fund. The bulk of the expenses thus falls on the cap.

So far there is not much difference between the two classes of asso. In a mut. asso., unprotected by a guarantee cap., the pol.-holders stand to bear the whole brunt of failure. They may not only have their pol. unprotected by a sufficient ins. fund, but they may be held liable for the outside engagements of the asso. We will not pursue this aspect of the subject, for the simple reason that we do not suppose it will ever be attempted to found another purely mut. ins. asso. in the U. K. The time has gone by; the difficulties are too formidable.

It may be further observed too, that all we have hitherto said will apply to any trading asso., and is not peculiar to ins. asso. We now propose to consider the special peculiarities of ins. asso. in this matter of Expenses of Management.

It may be said of all branches of Ins. bus. that the prem. charged is made up of two distinct parts, which either theory or practice has defined, viz.—1. The charge necessary for undertaking the risk incurred. 2. Such a sum as will provide for the expenses incident to the carrying on of the bus., having regard to its peculiar nature. The entire prem. charged by any particular asso. must not be arbitrary, but has to be regulated by the practice of other cos.; as also have the risks which are to be covered in respect of that prem. In manufacturing and some other enterprises, improvements in the process of manufacture and working come in, and widen the margin of profit. With ins. asso. there are no such outside advantages. But there is yet another, and a far more important, distinction.

In Commerce every individual article produced is made to yield its own specific profit, apart from any other article of the same or any other class. In Ins. it is altogether different. One risk, although charged with the proper per-centage of profit, cannot be expected to pay; cannot in fact be undertaken. The bus. is dependent upon *average;* and average can only be obtained in dealing with numbers; while the individuals which constitute the component parts of the numbers have to be selected with judgment, or the average resulting will not be such as is expected, or as is necessary to successful working.

We may take an example of this in regard to *F. Ins.* For a prem. of 2*s.* 6*d.* the asso. will ins. £100 on a brick-built dwelling-house of ordinary construction, or its contents, in case the same shall be destroyed by fire within one year. Now it is clear that 800 such risks must be accepted in order to raise from the prems. £100 to pay even one loss; but as there are expenses of man. to provide for, it may be fairly said that the office must obtain the prem. upon 1200 risks of £100 each (covering an entire risk of £120,000) in order to provide for one loss of £100; while if the 1200 risks be not very carefully selected, there will be more than one fire among them in the year, and then the bus. will prove a certain loss!

We have now to apply these considerations to the matter before us. An ins. asso. *must bring up its transactions to a certain magnitude before its bus. can pay.* Herein lies one of the initial difficulties in connexion with Expenses of Man. *The foundation expenses must continue until the bus. becomes of sufficient magnitude to be self-sustaining, in regard to its own inherent nature.* How long, after this point has been touched, the cap. or guarantee fund should be entrenched upon, constitutes the first part of the problem before us; while the period within which the result indicated should be reached is not to be passed by without some attempt at solution. We are inclined to embrace the two questions in one answer. If within say seven years from the commencement of active working, the asso. be not rendered self-sustaining, alike as to its risks, and its expenses of man., then it must be regarded as a failure; and its further continuance has to be measured by the loss the shareholders are willing to incur. But when the cap. or guarantee fund becomes exhausted, whether before or after the seven years, and the future loss must, in the nature of things, fall upon the pol.-holders, then the enterprise should be stopped by the strong arm of the law. This point will be further discussed under INSOLVENCY IN INS. ASSO.

The remainder of our obs. will apply to life asso. only; and rather to the pol.-holders than to the shareholders. In mut. asso. the entire expenditure falls upon the pol.-holders sooner or later. But even here a liberal expenditure in early years, in view of building up a paying bus. rapidly, may be quite prudent. An unwise expenditure will necessarily be the converse. In proprietary cos. the proportion of the entire profits to be realized which is assigned to the shareholders is limited, usually to *one-fifth*. It is, therefore, easy to see that the judicious expenditure of cap. for the rapid building up of a paying bus. may be of very great advantage to the pol.-holders—they in fact reaping four-fifths of the benefit; while even the unwise expenditure of cap. cannot prejudice the latter very materially, so long as the life fund be kept intact.

So far we have mainly had in view the younger class of ins. asso., but we now have to glance at the position of those of more mature growth—which have admittedly reached the self-sustaining period—in regard to this same question of EXPENSES OF MAN.

We have seen that but a certain proportion of the prems. is contemplated for expenses. This varies with different asso. from 20 to 30 p.c. We, speaking generally of all ins. asso., venture to say that 25 p.c. of the prems. on an average should be regarded as the very outside limit. The ambition of every soundly-conducted office must be to preserve as much of this admittedly special expense fund as possible, in order that the same may, with other sources of profit, go to make up the surplus fund: for out of this last the bonuses are declared; and the magnitude of the bonuses acts in favour of the asso. by bringing to it a larger bus. at a smaller cost; and so this prudence operates with compound force upon the prosperity of the asso.

There is no need to dwell further upon this last aspect of the case. The importance of the question falls in the opposite direction—not how *little* of this margin it may be prudent to expend; but the rather, where is the limit upwards? or, where is the line to be drawn between the limits of absolute safety and certain danger? This we propose to try and answer.

Even at the threshold two considerations crop up, the importance of which will be appreciated by the initiated. These may be designated the *present* and the *future.* Reduction of present expenditure may be secured by lessening the volume of new lives brought in; *i.e.* by reducing the amount of *new prems.* This is, or may be, sacrificing the *future* for the *present.* The prosperity of a life office can only be maintained by bringing into its ranks annually, or at other stated periods not too remote, a certain proportion of new and well-selected lives. This proportion should bear some relation—in fact we think, as a matter of principle, a well-defined relation—to the bulk of the existing bus.

In an office which has been estab. for 30 years or upwards, it certainly should not be less than the number of lives passing out ann. by the united causes of death, surrender, and effluxion of time; unless, indeed, it be intended that the office shall ultimately die out. In younger offices the number of new lives should bear a much greater relation to the whole; for instance, should not be less than 10 p.c.; and in very young offices even a much larger proportion.

It is upon this question of "new bus.," *i.e.* new and well-selected lives, that so much of the success of ins. asso. depends. It is the obtaining this new bus. that swells up the expenses of man., by reason of agents' commissions, medical examination fees, policy stamps, printing, advertising, travelling expenses, postages, etc.; whereas the not obtaining it means the certain decay of the asso. For these reasons the question of expenditure should always turn, for its ultimate solution, upon the measure of the new bus. which results from it. Apart from the importance of obtaining this new bus. on the future prospects of the office, it has this great present advantage: that the direct mort. resulting from it is for a number of years much below the average—this is technically known as the "benefit of selection"; and so it comes to pass, by necessary process, that a due proportion of new lives periodically admitted leavens the mort. of the entire mass.

It has often been attempted to indicate certain ratios of expenditure for life ins. asso.; and always, we believe, without regard of, or attempt to fix, any necessary minimum or maximum boundaries for such new bus. Admitting as a principle that the maximum expenditure of an estab. life office must never exceed the 25 p.c. of its entire prems.—what is the next stage? May it not be more advantageous for one office to expend 15 p.c. of its prem. income to obtain an accession of new lives bearing the relation of 10 p.c. to the bulk of its existing bus. (taken at the end of the preceding year), than for another office to expend 10 p.c. of its prem. income, and only obtain an accession of 5 p.c. to the number of its lives or pol.? If this principle be admitted, do we not thereby obtain something like a standard of justice by which to measure expenditure? In the arbitrary assumption that the rate of expenditure should, for instance, never exceed 10 p.c. of the prems., without any measure of results being attempted, we have neither reason nor justice.

It has been attempted, by way of another arbitrary rule, to be shown that the expenses of a life office should never exceed the amount of its *new prem. income for the same year;* while it may be regarded as safe if within these limits. There is perhaps a rough justice in this proposition; but it is not difficult to suggest or discover instances where it would work with unfairness. But even this crude test is much in advance of the system of per-centage ratios, without any regard to the age of an office, its past history, and other well-understood circumstances.

There is nothing, perhaps, in which the real skill and aptitude of the principal official of a life office is more shown than in that of bringing together such an amount of new bus. annually as is suited to the circumstances of his asso. at a reasonably small cost. In comparing asso. in this respect, their relative *age* is to be taken into account; and sometimes other circumstances. By means of the principle we have suggested in this art., we believe comparisons may be instituted with some regard to fairness. A man who goes on persistently expending 21*s*., or more, to obtain a £1, will soon be judged to have neither genius nor fitness for his position. But, on the other hand, those who keep down expenditure at the risk of imperilling the future of their asso., from the causes already indicated, will have their incompetence exposed, as the mask of fixed ratios, under which they have hitherto sought shelter, is removed.

District man. and agents have a direct interest in keeping down unproductive expenditure. The asso. that indulges in it must soon pass out of existence; and in this way the interests of Ins. are damaged. They should learn that the wisdom of all expenditure is to be finally judged of by results. But they must learn too, on the other side, that an office which assumes to conduct its bus. at 7 or 8 p.c. upon its prem. income, may, when judged by tests such as those we have indicated, be much less desirable for intended insurers, in view of the future, than offices which are conducting their bus. at twice that rate of expenditure. All things being equal, the rate of expenditure for man. should gradually decrease as the ann. income of the co. grows larger.

Where it is the custom of an office to pay its agents by brokerage commission, the larger its new business, the heavier will be its current rate of expenditure; but this is amply compensated for by the saving of renewal commissions in the future. An unduly large proportion of new bus. will always place a life office at an apparent disadvantage in regard to its expenses of man.; but its *future* bonus results should fully compensate for such increase of expenditure, or it will have been unwisely made. These latter remarks apply with great force to some of the American offices, and, in a lesser degree, to several of the more progressive British offices.

Of all that has been written upon this subject, the only letter that occurs to us as worthy of being preserved is the following, addressed by Mr. W. M. Makeham to the Ed. of the *Ins. Record,* and pub. in that paper on 9 Feb. 1872; the more so that we have never seen any attempt to answer its arguments. We append it, of course subject to our own views, as already expressed in this art.:

Mr. Sprague seems to anticipate, with some degree of satisfaction, the "wholesome" criticism

which we may now look forward to as the fruit of the recent legislation in respect to Life Assu. If I could be assured that the functions of Rhadamanthus would always be exercised with the ability, discrimination, and stern impartiality which Mr. Sprague himself has recently displayed in this capacity, I should probably share in his satisfaction. As it is more than probable, however, that the office will frequently be usurped by persons but very imperfectly qualified for its duties, I have thought it might be useful to attempt to neutralize in some measure the mischief likely to ensue by calling attention to one point upon which the critics I have referred to are pretty certain to go wrong.

A favourite post against which these enlightened public instructors are in the habit of running their heads has its origin in a kind of axiomatic notion that a co. which, under any circumstances, expends in man. (or, as they would call it, mismanagement) more than, say, 15 p.c. of its actual prem. income, is incurring a lavish scale of expenditure, and is likely, in course of time, to (as the saying is) "come to grief." The fact being, as the best actuaries now know very well, that one office spending 20 p.c. may really be more economically and profitably managed than another which spends only 10 p.c. of its prem. income.

It will not be denied that, according to the scale of prems. usually charged, a bus. would be sufficiently remunerative if the entire cost of managing did not exceed the first year's prem., together with 5 p.c. on the renewal prems. Now, let us first suppose the case of an office whose prem. income is £50,000, of which £10,000 consists of new prems., and suppose the entire expenses of management (for the year) to be £12,000, viz: First year's (or new) prems. £10,000; 5 p.c. on renewals (£40,000), £2000; total £12,000. So that the expenses are nearly 25 p.c. of the total prem. income.

As a counterpart to the above I will now take the case of an office doing the same amount of new bus. but whose total prem. income is £200,000, instead of £50,000, the expenses in the case being: First year's (or new) prems., £10,000: 5 p.c. on renewals (£190,000), £9500; total £19,500. The proportion of which to the total prem. is less than 10 p.c.

Now it is evident that, according to the suppositions made, these two offices are, in reality, incurring precisely the same rate of expenditure, notwithstanding that the first is spending nearly 25 p.c., and the second less than 10 p.c. of its prem. income. This, I think, should be sufficient to convince any one that the arbitrary test of an uniform per-centage of expenditure on the total prem. income is about as imperfect a one as could well be devised, and I cannot help thinking, therefore, that the most important defect of the recent Act consists in the omission of a provision for separating the "new" and the "renewal," prems. in the revenue account of the year.

In short, I maintain that to enable us to judge, with any degree of truth, of the actual cost incurred in transacting the bus. of life assu., it is essential to take into account, not simply the ratio which the expenditure bears to the total prem. income, but also the further element of the relative proportions of the "new" and "renewal" prems. of which such total prem. income is composed.

In 1874 Mr. James R. Macfadyen, of the *Legal and Gen.*, contributed to the *Ins. Times* of N. Y. a paper: *Does a large New Business benefit the Pol.-holders of a Life Co.?* This paper is now reprinted in the *Assu. Mag.* vol. xviii. p. 335; and will be found to repay a careful perusal. Many of the points we have already discussed are brought out with considerable force; but we reserve a full review of the paper for our art. NEW BUSINESS.

Since the preceding art. was written, the question to which it relates has been brought before the Inst. of Act. by Mr. A. H. Bailey, in a paper which in fact constitutes a pamph. since pub.: *The Expenses of Life Assu. Cos.: how they Affect the Assured*, 1875. The subject is here treated of in a manner at once original and practical.

The propositions which the author lays down in reference to the man. of ins. asso. are the following:—

(*a*) That the first consideration should be the interests of the assured. (*b*) That, therefore, the true test of success should be the pecuniary advantage derived by the assured from the co. (*c*) That, nevertheless, the first consideration in several cos. has been the increase of the bus., and that the interests of the assured have been injured in consequence. (*d*) *That the amount of a co.'s bus. is not a test of success.*

He points out that "every new pol. effected brings a new partner to share in the profits, so that an increase of bus., if obtained at an increased rate of expenditure, diminishes the rate of profit to the assured;" and he contends that the wisdom or otherwise of every extraordinary expenditure, such as branch offices, etc., should be considered in the light of "How will it affect the assured?" He says, "If the rate of expense increase, the rate of profit *must* diminish; *this is the main cause why bonuses have fallen off, and why Life Assu. has in consequence become more costly to the public.*" He then applies a test in support of his proposition. The life offices are required by the Act of 1870 to make a return, according to the 5th schedule of that Act, of the amount of profit divided among the insured, and also of the amount of prems. received in the period during which this profit has accrued. "So that by a simple division can be ascertained the ratio of this profit to every £100 received in prems.; this ratio is here called the rate of profit to the assured."

A Table is then given, embodying 47 British offices, arranged in the order of extent of ann. income, which is stated, together with the proportion of parti. pol.: the relative rate of prem. charged, the rate of expenses of man., and, as a final consequence, the rate of profit to the insured. The results are very startling: so much so as to cause the suspicion—but for the known mastership of the subject by the author—that some fallacy must lurk therein. The aspect of the case here presented is worthy of, and indeed must demand, the careful consideration of all concerned in the management of life offices.

The author recognizes the principle of justice to the younger offices, by omitting from his T. all those having a prem. income of less than £30,000.

It appears to us worthy of consideration whether, on principle, all expenditure required for extraordinary purposes, at any time in the hist. of the co., such as founding foreign branches, advertising new features, etc., and more particularly the cost of purchasing businesses by amalg. or otherwise, should not always be defrayed direct from the capital account; such cap. being only replaced from the surplus of future valuations properly available for such a purpose. By such means the Life Funds would never be placed in jeopardy; while the proprietors would soon learn to exercise proper supervision over expenditure, which would not only affect dividends, but show itself where unwisely made in the depreciated market value of the shares.

The question of Expenses of Man. will again present itself in treating of the INSOLVENCY OF INS. ASSO.; NEW BUSINESS; VALUATIONS FOR SURPLUS, etc., etc.

EXPERIENCE LIFE ASSU. CO.—Founded in Edinburgh in 1843, on the basis of a mut. ins. asso., but with a "Guar. Cap. in the first instance" of £300,000. One-sixth of the profits were to be set aside for the benefit of those providing this Guar. Cap.

The prems. of the Co. were based upon the *Experience* T. of Mort. (No. 1), then just formed—hence its name. The prosp. said hereon:

> The prems. charged are equitably graduated to the different ages of life. . . These T. are better adapted for the purpose than those which have hitherto been in use, as they give the rate of mortality prevailing amongst selected lives. The advantage of T. thus framed, as will be seen from those annexed, is very great, particularly to young and middle-aged persons. To assurers [the assured] of all ages strict justice is done, and no class suffers by another, as must be the case where rates are incorrectly graduated, more particularly in mut. asso. The prems. charged in the mut. department are graduated in the same equitable manner as the non-par. rates: the extra charge for the add. benefit being calculated to bring the rates as near as the difference in the graduation will admit of, to those of the old-estab. mut. offices, so that the assured may receive the highest rate of bonus.

The Office was founded by Mr. Alex. W. Robertson, Accountant, Edin., who became its Man.

In 1845 a branch was opened in Lond., and Mr. T. Y. Wardrop was appointed Sec.

The progress of the Co. was by no means rapid.

In 1850 its pol. were transferred to the *Standard*.

EXPERIENCE LIFE AND FIRE INS. CO.—Projected in 1862, but it did not advance far beyond regis. of title.

EXPERIENCE MORT.—The mort. experienced by life and annu. asso., as distinguished from the general mort. of the kingdom, or of particular places. Hence we have EXPERIENCE TABLES, alike of individual cos., and of combined offices; of which we next proceed to speak. The rule we have laid down in this work is the following: Where the experience is of any one particular co., we prefix the name of the co., as *Amicable Experience; Equitable Experience*, etc. Where the experience relates to a number of cos., we speak of the T. as *Experience* No. 1; *Experience* No. 2—having reference to the chronological order of their production. Some uniformity in this respect among modern writers would avoid confusion of ideas, and corresponding mistakes.

EXPERIENCE MORTALITY TABLE No. 1.—This T., sometimes called the "Combined Experience," sometimes the "Experience of 17 Offices," and often simply designated the "Actuaries Table," but in these pages designated *Experience T. No.* 1, originated out of a want long felt, and which found expression at a meeting of actuaries and others connected with Life Ins., held at the London Coffee House, Ludgate Hill, on the 19 March, 1838. At this meeting it was resolved unanimously:

> 1. That in the opinion of the meeting it is desirable that the different assu. offices should, from their records, contribute the requisite data to a common fund, to afford the means of determining the law of mort. which prevails among assured lives.
>
> 2. That such a law of mort., truly determined, would prove generally useful, especially to the life offices themselves, and the numerous class of persons availing themselves of those institutions.
>
> 3. That persons professionally engaged in similar investigations are most likely to draw correct conclusions from existing data, and to classify the same into forms, showing the true rate of mortality among assured lives.

A Committee was appointed to determine upon the best means to be adopted, and the forms to be employed in carrying into effect the above resolutions. This Committee consisted of Mr. Charles Ansell (*Atlas*), Mr. Griffith Davies (*Guardian*), Mr. J. J. Downes (*Economic*), Mr. Benjamin Gompertz (*Alliance*), Mr. George Kirkpatrick (*Law Life*), Mr. Joshua Milne (*Sun*), Mr. J. M. Rainbow (*Crown*), Mr. W. S. B. Woolhouse (*National Loan Fund*).

The first Hon. Sec. to the Committee was Mr. Robert Christie (No. 1), who died very soon after the work was commenced; and was succeeded by Mr. Samuel Ingall, whose efficient services the Committee duly acknowledged.

The circular sent by the Committee to the offices which had agreed to contribute their experience contained (*inter alia*) the following paragraph:

> The question of finding the experience from returns of pol. issued, or on lives assured, was fully discussed by the Committee; to confine the returns to a list of the lives assured in each office might at first appear desirable, as a means of avoiding the insertion of the same life more than once, in cases where more than one pol. has been granted thereon; but when it was considered that in combining the returns of several offices, it would be impossible to prevent the repetition of the same life, as many are insured in several offices, and that in combining large numbers, where lives represented by duplicate pol. are subject to the same ratio of mort. as those represented by single pol., *the result cannot be sensibly affected by the duplication*, it was determined by the Committee to confine the lists to a record of pol. issued on single lives.

We quote this circular because we have sometimes seen it stated that the point was overlooked by that Committee.

The pol. were required to be arranged in the returns sent under 6 classes, viz.: "Town Males" and "Town Females"—meaning by the term *Town* all such policies as had been introduced without the intervention of *agents*; "Country Males" and "Country Females"—meaning by *Country* such as had been admitted through agents not resident in Ireland; and "Irish Males" and "Irish Females"—meaning such as had been admitted through *Irish* agents.

The offices contributing their experience were "seventeen," viz.—the *Amicable* and *Equitable*, the *Alliance*, *British Commercial*, *Crown*, *Economic*, *Guardian*, *Imperial*, *Law Life*, *London Life*, *Norwich Union*, *Promoter*, *Scottish Widows*, *Sun*, *Universal*, and the *University*. But the returns of the *British Commercial* and *Sun* were confined to Irish lives only.

We may remark in passing that 13 out of the 17 offices contributing their experience were proprietary cos. This has a significance when viewed in the light of an obs. made by Mr. Babbage [see EQUITABLE SO., MORT. EXPERIENCE OF—sub-heading, *Babbage's* T. 1826].

We ought to state here that while but 17 offices contributed their mort. experience, no less than 58 ins. asso.—being very nearly all the then existing life offices—contributed towards the expenses of collating and preparing the data for the purposes in view, and finally of printing the same for the use of these contributing offices. This fact alone shows the interest with which the work was regarded by the actuarial profession generally in the U.K.; and before the task was completed this interest had gradually extended itself through France and Germany; and prob. also to the U.S. But we must resume our narrative.

The returns as they came in "were blended together so as to prevent any use being made of the returns separately," *i.e.* of any particular office. The details from the returns were then abstracted into schedules specially prepared for the purpose.

The numbers in some of the classes orig. proposed, when kept separate, were found to be too small to admit of any useful deductions; and they were subsequently combined into five classes. 1. *Males* (Town, Country, and Irish). 2. *Females* (Town, Country, and Irish). 3. *Town* (Males and Females). 4. *Country* (Males and Females). 5. *Irish* (Males and Females).

"The materials being thus combined," we are told—

> The next process was to involve them, so as to obtain the number exposed to the risk of mort. in each year of age, in order to ascertain the proportion of deaths; and for this purpose the formula given by Mr. Woolhouse, in his tract on the *Investigation of Mort. in the Indian Army*, pub. in 1839, was employed, with a slight add., adapting the formula to the circumstance of the returns having been made by the different offices to the end of the year to which the experience was given.

The total number of pol. brought under obs. in the returns (including the experience of the *Equitable* So., pub. 1834—Mr. Arthur Morgan's T.) was 83,905, of which 44,877 were in existence; 25,247 discontinued; and 13,781 had become claims by death. The number of pol. in which the sexes were distinguished was only 40,616, of which 36,414 were on the lives of males, and 4202 on the lives of females.

Of the 40,616 pol. in which the sexes were distinguished, 25,462 were in existence at the termination of the experience; 11,226 were discontinued during life; and 3928 became claims by the death of the parties on whose lives the pol. were granted.

In cases where the sexes could not be distinguished, it was still possible to distinguish "Town Ins." from others.

It was found impracticable to combine the facts contained in the whole returns, so as to show the exact number that died, and were discontinued, *at each year of age;* as some of the returns were made up giving the current age, and others the completed age at entering; "and the number existing in some returns had been exposed to the risk of mort. for a whole year, and in others to no part of it." Then follows this explanation:

> When the number existing at any given age had been exposed to the risk of mort. for the whole of the year, as in the case of the T. of the *Equitable* So., only one-half of the discontinued was deducted from the number that attained the given age; and when the number existing to the termination of the experience had not been exposed to the risk of mort. for any part of the year, as is the case in some of the returns, the whole of the number existing and half the discontinued were deducted from the number which attained the age, in order to ascertain the number exposed to the risk of mort. during the year, out of which the deaths were reckoned to have taken place.

The returns of the causes of death "were deficient in so many of the lists, that it was not considered desirable to make any classification of them."

The Committee furnish us with another point of necessary explanation:

> By assuming (what is not far from the truth), that every person on an average commences his assu. in the middle of the year, and at an age half a year younger than represented, he will complete each age on the 31st of December after his admission; and the office will incur, on an average, half a year's risk on the life of every person in the first year of his assu., and in the current year of the age in which he was admitted. Thus for all persons who effected assu. during the year 1822, in the 30th year of their age, and which were existing on the 31 Dec. 1837 (to which period a great number of the returns were made up), the office was exposed on an average to a risk of 15½ years on lives which had passed from the age of 29½ to the completion of their 45th year; and the same quantity of existence would be taken for pol. effected in the year 1822, and which became claims in any part of the year 1837; but for such pol. as were discontinued otherwise than by death, half a year's existence less would be taken, as the latter are supposed to be discontinued at different periods of the year, or on an average to have been in force only one-half of the year in which they were discontinued.

The numbers exposed to risk of mort. for each age, having been obtained for the five classes before named, a comparative T. was prepared, of which the following is an abstract—the classes being increased to 6 by giving the combined results of males and females :

Completed Years of Age.	Males.		Females.		M. & F. Combined.		Town.		Country.		Irish.	
	Total Years of Life.	Actual Deaths.	Total Years of Life.	Actual Deaths.	Total Years of Life.	Actual Deaths.	Total Years of Life.	Actual Deaths.	Total Years of Life.	Actual Deaths.	Total Years of Life.	Actual Deaths.
10 and under 20	2,375	19	810	4	3,185	23	1,258	6	1,647	15	281	2
20 „ 30	19,101	166	2009	33	21,100	199	10,680	83	7,727	72	2,703	44
30 „ 40	60,843	604	3870	61	64,713	665	31,772	287	21,657	225	11,285	162
40 „ 50	61,646	900	5387	85	67,033	985	30,113	377	21,416	275	15,505	333
50 „ 60	38,054	916	5207	115	43,261	1031	16,534	335	13,488	271	13,240	425
60 „ 70	15,094	637	3223	119	18,317	756	5,285	187	5,847	220	7,176	349
70 „ 80	2,420	199	642	56	3,062	255	692	53	1,008	78	1,363	124
80 „ 90	82	10	19	4	101	14	30	5	30	2	41	7
90 and upwards	5	0	0	0	5	0	0	0	0	0	5	0
Totals	199,620	3451	21,167	477	220,787	3928	96,364	1324	72,820	1158	51,599	1446

The following T. shows the ann. number of deaths in quinquennial periods of age, out of 10,000 persons living at each age, for each class observed upon—the same being contrasted with the *Northampton* and *Carlisle* T.:

Ages.	Males.	Females.	Town.	Country.	Irish.	Combined Town and Country (adjusted).	*Northampton* T.	*Carlisle* T.
20 to 24	462	985	578	551	421	374	747	351
25 „ 29	437	691	344	457	350	401	814	410
30 „ 34	429	769	387	484	375	438	886	506
35 „ 39	547	803	476	546	488	485	972	547
40 „ 44	638	734	596	559	552	548	1113	705
45 „ 49	844	841	661	749	666	679	1266	718
50 „ 54	1009	918	882	791	904	902	1521	760
55 „ 59	1512	1320	1238	1310	1248	1241	1800	1103
60 „ 64	1940	1497	1540	1892	1768	1767	2173	1847
65 „ 69	2513	2487	2396	2025	2627	2589	2734	2235
70 „ 74	3613	3724	3523	8845	3913	3812	3774	3469
75 „ 79	6568	8135	5787	7723	5655	5607	5414	5332

It must be remembered, in comparing the relative mort. as shown by this T., that the numbers at the lower and higher ages in some of the obs. were very small ; and therefore too much importance must not be attached to the apparent irregularity exhibited at those ages.

It was considered desirable to make another comparison, "by means of the expec. or average duration of life for each class." The result is shown in the following abstract. Some new combinations are made, and the adjusted results given ; and for the purposes of comparison, the expec. shown by the *Northampton* and *Carlisle* T. are included :

Age.	Male Lives—Town, Country, & Irish Experience.	Female Lives—Town, Country, & Irish Experience.	Town—Male & Female Experience.	Country—Male & Female Experience.	Irish—Male & Female Experience.	Combined Town—(Male & Female) Experience.	General—Embracing all the preceding classes—Experience.	Adjusted (Town & Country Combined) Exp.	*Northampton* T. Expectation.	*Carlisle* T. Expectation.	Age
20	39·84	35·86	41·22	40·33	34·95	41·55	40·97	41·49	33·44	41·46	20
25	36·63	34·41	38·56	37·55	31·94	38·26	37·84	37·98	30·85	37·86	25
30	33·17	31·73	34·84	34·20	29·71	34·54	34·25	34·43	28·27	34·34	30
35	29·52	29·07	31·12	30·78	26·30	30·77	30·55	30·87	25·68	31·00	35
40	26·06	26·36	27·53	27·38	23·36	27·20	27·07	27·28	23·08	27·61	40
45	22·63	23·21	24·08	23·83	20·30	23·61	23·55	23·69	20·52	24·46	45
50	19·41	20·05	20·58	20·48	17·76	20·07	20·11	20·18	17·99	21·11	50
55	16·21	16·78	17·25	16·96	15·04	16·76	16·83	16·86	15·58	17·58	55
60	13·47	13·78	14·23	14·03	12·67	13·68	13·81	13·77	13·21	14·34	60
65	10·87	10·60	11·18	11·44	10·19	10·86	11·03	10·97	10·88	11·79	65
70	8·34	7·93	8·61	8·48	7·92	8·44	8·50	8·54	8·60	9·18	70
75	6·03	5·37	6·29	5·55	5·97	6·45	6·46	6·48	6·54	7·01	75
80	4·75	4·75	4·75	4·75	4·75	4·75	4·75	4·78	4·75	5·51	80

Note.—We shall give the expectation in extenso in connexion with the several Tables, as we have occasion to introduce them.

It will be observed that the figures in the lower line are in nearly all the columns the same. This the Committee explains as follows:

> As the number of deaths at 80 years of age and upwards was too small to produce any useful results, the expec. of life at 80 was assumed to be 4¾ years, or 4·754, as given in Mr. [Arthur] Morgan's T. E. deduced from the experience of the *Equitable* So. . . .

The Committee were of opinion that it would be "most desirable, and best answer the purpose of these inquiries, to put the various offices, and those who might be interested in carrying out such investigations, in possession of what appeared to be the most useful and valuable classifications of the bare facts comprised in the different returns, without the introduction of any arbitrary or theoretical adjustments." However, as some persons might be desirous of seeing an adjusted T. of Mort., one was deduced "from the combined Town united with the Country assurances, comprising the whole of the Male and Female lives that admit of being separated from the Irish." . . . "The prob. of surviving each year, and the numbers living at each age, were then calculated, and adjusted according to the method and formulæ given by Mr. Woolhouse in the pamph. before referred to.

The result was the following T., which shows for each age the number living; the ann. decrement; the expec. of life; the prob. of surviving one year; the prob. of dying in one year; the deaths p.c. according to the adjusted T.; also according to actual experience unadjusted. The orig. contains the logarithms for cols. 2 and 5; these are omitted as not being required for our present purposes:

Completed Age.	Living.	Dying.	Expectation.	Prob. of surviving one year.	Prob. of dying in one year.	Deaths per cent. in each year.	The same unadjusted.	Completed Age.
10	100,000	676	48·36	·9932	·0067	·676	·768	10
11	99,324	674	47·68	·9932	·0067	·679	·000	11
12	98,650	672	47·01	·9931	·0068	·681	·789	12
13	97,978	671	46·33	·9931	·0068	·685	·434	13
14	97,307	671	45·64	·9931	·0068	·690	1·133	14
15	96,636	671	44·96	·9930	·0069	·694	·498	15
16	95,965	672	44·27	·9929	·0070	·700	·858	16
17	95,293	673	43·58	·9929	·0070	·706	·503	17
18	94,620	675	42·88	·9928	·0071	·713	1·044	18
19	93,945	677	42·19	·9927	·0072	·721	·798	19
20	93,268	680	41·49	·9927	·0072	·729	1·238	20
21	92,588	683	40·79	·9926	·0073	·738	1·095	21
22	91,905	686	40·09	·9925	·0074	·746	·595	22
23	91,219	690	39·39	·9924	·0075	·756	·851	23
24	90,529	694	38·68	·9923	·0076	·767	·674	24
25	89,835	698	37·98	·9922	·0077	·777	·767	25
26	89,137	703	37·27	·9921	·0078	·789	·715	26
27	88,434	708	36·56	·9919	·0080	·801	·894	27
28	87,726	714	35·86	·9918	·0081	·814	·771	28
29	87,012	720	35·15	·9917	·0082	·828	·527	29
30	86,292	727	34·43	·9915	·0084	·842	·719	30
31	85,565	734	33·72	·9914	·0085	·858	·765	31
32	84,831	742	33·01	·9912	·0087	·875	·609	32
33	84,089	750	32·30	·9910	·0089	·892	·948	33
34	83,339	758	31·58	·9909	·0090	·910	·880	34
35	82,581	767	30·87	·9907	·0092	·929	1·057	35
36	81,814	776	30·15	·9905	·0094	·948	·955	36
37	81,038	785	29·44	·9903	·0096	·969	1·008	37
38	80,253	795	28·72	·9900	·0099	·991	·995	38
39	79,458	805	28·00	·9898	·0101	1·013	·957	39
40	78,653	815	27·28	·9896	·0103	1·036	1·161	40
41	77,838	826	26·56	·9893	·0106	1·061	1·080	41
42	77,012	839	25·84	·9891	·0108	1·089	1·056	42
43	76,173	857	25·12	·9887	·0112	1·125	1·061	43
44	75,316	881	24·40	·9883	·0116	1·170	1·175	44
45	74,435	909	23·69	·9877	·0122	1·221	1·217	45
46	73,526	944	22·97	·9871	·0128	1·248	1·099	46
47	72,582	981	22·27	·9864	·0135	1·352	1·306	47
48	71,601	1021	21·56	·9857	·0142	1·426	1·656	48
49	70,580	1063	20·87	·9849	·0150	1·506	1·485	49
50	69,517	1108	20·18	·9840	·0159	1·594	1·630	50
51	68,409	1156	19·50	·9831	·0168	1·690	1·720	51
52	67,253	1207	18·82	·9820	·0179	1·795	1·895	52
53	66,046	1261	18·16	·9809	·0190	1·909	1·852	53
54	64,785	1316	17·50	·9796	·0203	2·031	1·812	54

Completed Age.	Living.	Dying.	Expectation.	Prob. of surviving one year.	Prob. of dying in one year.	Deaths per cent. in each year.	The same unadjusted.	Completed Age.
55	63,469	1375	16·86	·9783	·0216	2·166	2·492	55
56	62,094	1436	16·22	·9768	·0231	2·313	2·446	56
57	60,658	1497	15·59	·9753	·0246	2·468	2·201	57
58	59,161	1561	14·97	·9736	·0263	2·639	2·398	58
59	57,600	1627	14·37	·9717	·0282	2·825	3·010	59
60	55,973	1698	13·77	·9696	·0303	3·034	3·013	60
61	54,275	1770	13·18	·9673	·0326	3·261	3·283	61
62	52,505	1844	12·61	·9648	·0351	3·512	3·164	62
63	50,661	1917	12·05	·9621	·0378	3·784	3·530	63
64	48,744	1990	11·51	·9591	·0408	4·083	4·820	64
65	46,754	2061	10·97	·9559	·0440	4·408	4·529	65
66	44,693	2128	10·46	·9523	·0476	4·761	4·781	66
67	42,565	2191	9·96	·9485	·0514	5·147	4·493	67
68	40,374	2246	9·47	·9443	·0556	5·563	5·735	68
69	38,128	2291	9·00	·9399	·0600	6·000	6·205	69
70	35,837	2327	8·54	·9350	·0649	6·493	7·553	70
71	33,510	2351	8·10	·9298	·0701	7·016	7·072	71
72	31,159	2362	7·67	·9241	·0758	7·580	6·720	72
73	28,797	2358	7·26	·9181	·0818	8·188	7·936	73
74	26,439	2339	6·86	·9115	·0884	8·847	9·182	74
75	24,100	2303	6·48	·9044	·0955	9·556	10·054	75
76	21,797	2249	6·11	·8968	·1031	10·318	10·235	76
77	19,548	2179	5·76	·8885	·1114	11·147	10·208	77
78	17,369	2092	5·42	·8795	·1204	12·044	13·455	78
79	15,277	1987	5·09	·8699	·1300	13·006	13·469	79
80	13,290	1866	4·78	·8595	·1404	14·041	14·346	80
81	11,424	1730	4·48	·8485	·1514	15·144	17·981	81
82	9,694	1582	4·18	·8368	·1631	16·319	13·534	82
83	8,112	1427	3·90	·8240	·1759	17·591	14·286	83
84	6,685	1268	3·63	·8103	·1896	18·968	18·267	84
85	5,417	1111	3·36	·7949	·2050	20·510	22·076	85
86	4,306	958	3·10	·7775	·2224	22·248	20·137	86
87	3,348	811	2·84	·7577	·2422	24·233	17·964	87
88	2,537	673	2·59	·7347	·2652	26·527	22·053	88
89	1,864	545	2·35	·7076	·2923	29·238	25·843	89
90	1,319	427	2·11	·6762	·3237	32·373	15·625	90
91	892	322	1·89	·6390	·3609	36·099	33·333	91
92	570	231	1·67	·5947	·4052	40·526	29·630	92
93	339	155	1·47	·5427	·4572	45·723	14·286	93
94	184	95	1·28	·4836	·5163	51·630	50·000	94
95	89	52	1·12	·4157	·5842	58·427	66·676	95
96	37	24	0·99	·3513	·6486	64·865	0·000	96
97	13	9	0·89	·3076	·6923	69·231	100·000	97
98	4	3	0·75	·2500	·7500	75·000	...	98
99	1	1	0·50	·0000	1·0000	100·000	...	99

The most striking features exhibited in these T., speaking of them generally, were: (1) the great mort. found to prevail among *Irish* lives; (2) the marked difference in the rate of mort. between *Males* and *Females*; and (3) the near agreement between the *Town* and *Country* experience, "considering that no adjustment had been employed."

On comparing the results of the several T., the mort. annually, taking all ages together, was shown to be least among *Town* ins.; rather more amongst *Country;* and greatest amongst *Irish* ins. The mort. amongst ins. *Females*, taking all ages together, was greater than among ins. *Males;* and both these classes exhibit a greater mort. than either Town or Country; which, however, was found to arise from the Irish ins. being included amongst Males and Females. The mort. was found to be considerably greater for Females than Males between the ages 20 to 50; from 50 to 70 it was less; and after the last-named age it is at some periods greater; but the numbers were regarded as too small to be of any special import at those advanced periods of life. The *Irish* ins. were found to be subject to rather less mort. under 60 years of age, than is represented by the *Northampton* T., but after that age the mort. was greater; and taking all ages together, the deaths were more than 95 p.c. of what might be expected by that T.

On making a comparison of the different classes according to the "Expec." of life, it was seen that the average duration of males under 36 was greater than that of females; and from 36 to 61 years the average duration of the lives of females was greater than that of males; but it was supposed this might arise wholly or in part from the paucity of numbers at those advanced periods of life. The expec. of life for the class designated "Town" was found to agree very nearly with Mr. Arthur Morgan's *Equitable* T.: being a little more, but scarcely differing, one with another, a quarter of a year from 22 to 63 years of age. After the latter age the expec. was sometimes a little more and sometimes less than by Mr. Morgan's T.; but on the whole exhibiting a close agreement. The *Irish* class gave a considerably less expec. of life than Mr. Morgan's T. at all ages; and after the age 44, the expectation is even less than by the *Northampton* T. The class designated "Combined Town," in which the *Equitable* and *Amicable* total experiences were combined with the other "Town" ins., was found to give the expec. of life rather less than the "Town" class: this arising, it was supposed, from the ins. in these two offices being of longer duration than those in most of the other offices. The "Expec." of life deduced from the whole of the materials put together was found to differ very little from the "Combined Town." The four classes, "Town," "Country," "Combined Town," and "General," were found to agree very closely with those of the *Carlisle* T., although generally giving a lower expec. than that T.

The Committee offer the following important obs., which in some measure override or qualify all the mort. results previously spoken of:

> It may not be unnecessary to notice, that the materials from which the whole of the T. now produced are formed, represent a lower rate of mort. than can be expected *to prevail in a longer period of time than that over which the present obs. extend:* for the average duration of pol. embraced in nearly one-half of the experience *is under five years and a half;* and taking the whole of the experience together, which included that of the *Equitable* and *Amicable*, two of the oldest offices existing, the average duration of all the pol. *is not* 8 *years and a half.* This is readily accounted for when it is seen that more than half the pol. effected were existing at the termination of the obs., and nearly a third had been discontinued during the lifetime of the parties assured. *The circumstance of recent selection should not be lost sight of by such persons as may use these T. either for the sake of comparison or as the basis of other T. for granting assu.* The difference in the rate of mort. between recently selected lives and those of longer continuance in a so., is clearly shown by Mr. Galloway in the T. of mort. deduced by him from the experience of the *Amicable* So.

The Committee point out that, from the impracticability of combining the returns of the contributing offices, they were unable to show the effect of selection over the combined experience; but they had taken the returns of one of the offices, and from these had prepared some T. on the subject which we shall note under SELECTION, EFFECT OF.

The labours of the Committee were not concluded until 1843. The Committee say hereon:

> The completion of the work has taken more time than was at first expected; and it may be proper to remark that the whole of the returns were not received from the contributing offices until after the middle of the year 1841 [nearly three years from the time of sending out the forms], *and that the diversified classification of the assu. has added much to the complexity of the operations.*

It is to be hoped that most offices have now adopted pol. registers with the lives so classified that valuation schedules can be made with expedition. [CLASSIFICATION OF POL.] [MORT. T., CONSTRUCTION OF.]

The T. relating more particularly to the experience of female lives will be given under FEMALE LIFE; those relating exclusively to Irish lives under IRISH LIVES; and those relating more especially to country and town lives will be given under TOWN LIFE.

Finally, the Committee draw attention to the fact that, soon after the commencement of the undertaking, they were "deprived of the valuable services of their Hon. Sec., Mr. Christie, by his lamented death." The work was continued under the superintendence of Mr. Samuel Ingall, "whose efficient services the members of the Committee feel bound to acknowledge;" and "with every confidence, they submit these T. to the profession as the correct results of the experience of the contributing offices."

The Committee pub. the results of its labours in a quarto vol. in 1843: *T. exhibiting the Law of Mort. deduced from the Combined Experience of Seventeen Life Assu. Offices, embracing* 83,905 *Pol., of which* 40,616 *are distinguished by denoting the Sex of the Lives assu., and by classing them into Town, Country, and Irish Assurances.* There were 58 ins. asso. who subs. for copies of this work, and some add. copies, we presume, were printed, but none were intended for sale. It has long been, as a consequence, very scarce. The writer paid £4 4*s.* for his copy, in view of preparing the present art. Mr. James Stark shortly afterwards purchased a copy for a few shillings.

Same year (1843), Mr. Jenkin Jones (No. 2.) pub.: *A Series of T. of Annuities and Assurances Calculated from a new Rate of Mort. amongst Assured Lives: with Examples illustrative of their Construction and Application*, etc. Mr. Jones gave the following reason for the pub. of the book:

> It is of the utmost importance that the public should be made acquainted with the fact that such a Committee has been formed, and have availed themselves of the most extensive and special experience that could be obtained to determine the Law of Mort. which prevails amongst assured lives, and have thus enabled every existing office to test the adequacy of its rate of prems., and future offices to provide a rate for themselves, on a secure basis.

The new T. furnished embraced the D, N, S, M, and R cols. at 2½, 3, and 3½, p.c. int.; life annu. for single lives and joint lives; present values of absolute rev.; life assu., single and ann. prems. for single lives, for joint lives, and last survivor; also preparatory T. for valuation of pol., etc.

These were the first monetary T. deduced from the *Experience* T. No. 1.

In the same year the *Experience Life Assu Co.* was founded in Edin. Its principal feature was the adoption of rates deduced from the Combined Town and Country Experience, as shown in the T. we have already given.

Dr. Farr, in the 5th Rep. of Reg.-Gen. (pub. 1843), p. 338, says:

> These T. are exceedingly interesting, as they show the experience of the life offices so far as it extends, and the actual effect of their more or less imperfect selection of lives. It is an objection to all T. framed in this manner, on the experience of life offices and on annuitants, that you have to wait 50 or 100 years before all the lives have expired, and have then, in applying them practically, to assume that the future annuitants, etc., will be selected on the same principles, and be placed in the same circumstances. The most conflicting results are necessarily obtained by the incomplete obs.; thus, while Mr. Finlaison's T. makes females at 20 live 44·0 years, and males 38·4 years, the Actuaries' T. presents a result exactly the reverse: females selected for assurance at 20 have, according to their T., an expec. of 35·9 years, males of 39·8 years!

In 1849 Mr. W. T. Thomson pub. a *Logarithmic T., founded on the Experience Mort.* Mr. Peter Hardy, on presenting this T. to the Inst. of Act., said:

> It is a T. founded on the experience of the united offices, better known as the *Actuaries'* T., and calculated at the rate of 3 p.c. investment. If the T. be regarded merely as a specimen of the industry of one individual, it will command the respect of all the members of this Institute; and will prove, I trust, an incentive to the associates of our body to follow so useful an example. But the T. has a much higher claim on our attention and respect—it is founded, so far as I believe and can ascertain, on an entirely new arrangement of the elements of mort., and the int. of money; and those amongst the leading members of our profession to whom I have shown it, agree with me in considering its arrangement as quite novel.

It was upon the basis of the data used in the construction of this T. that Mr. J. A. Higham deduced the various T. given in his paper, read before the Inst. of Act. in 1851: *On the Value of Selection, as exercised by the Pol.-holder against the Co.* [Assu. Mag. vol. i. p. 179.]

Mr. F. G. P. Neison, in a paper read before the Inst. of Act. in 1851, on the existing data available for assu. systems, made (*inter alia*) the following observations:

> We have, however, T. derived directly from the experience of life offices, the *Equitable* and *Amicable* Sos.; but the bulk of the facts of both T. relates to remote years, and, therefore, if any importance is to be attached to the recent improvement in life, they are clearly not applicable to present operations of assu. cos. There is likewise the T. usually denominated the "Experience T.," deduced from the recorded obs. of 17 life offices, reported on by the Committee of Act., appointed in the year 1839. In these obs., like those deduced from the *Amicable* and *Equitable* offices, the bulk of the facts has no reference to recent years; but there is a much more serious objection to be brought against the results given in the *Experience* T. From the indisposition evinced by the contributory offices to let their individual experience be known even to the members of the Committee to whom the inquiry was entrusted, it became necessary that the different schedules should be submitted in an anonymous form: all were given with blank headings, and so completely mixed up together that it was impossible afterwards to determine from what office any particular schedule came. This arrangement prevented the investigation being any other than one confined to the pol. issued by those offices, and not an estimate of the mort. among a certain number of lives. To those, therefore, of even limited experience, it must be obvious that the results are thereby deprived of all value, as indicating the rate of mort. among the offices contributing the facts. Nothing is more notorious than the frequency with which the same life is assured in duplicate and triplicate, not only in the same office, but in several offices; and it often happens that on the same life there has at one time or another been issued as many as from 20 to 50 pol. in different offices conjointly. To take an extreme example, in order to show the nature of the principle, and its effect in vitiating the truth in any results derived from a calculation founded on the number of pol., and not upon the number of lives—it is well known in most of the assu. offices that a distinguished personage [George IV., while Prince of Wales and Prince Regent] was so fully assured in the life offices in this Kingdom that it was impossible to obtain any further pol. on his life from assu. cos.; and it has been said that recourse was had to Lloyds to have his life underwritten there. The pol. existing on this life at one time, it has been considered, could not be less than 300 or 400; it is hence evident that a death taking place under such circumstances would, in the result of such inquiry, appear as 300 or 400 deaths, while in fact only one had happened. In like manner, the fact of the life still surviving would produce the anomalous result of there being 1000 or 2000 years of life, depending on the duration of these pol., without any recorded death. It is therefore clear, that unless the principle of repeated pol. on the same life was uniform as to numbers, and very generally characteristic of the bulk of assu. effected, that compensation errors could not be expected to take place sufficient to render the results even a near approximation of the truth. So far, therefore, we are as yet without any satisfactory data, derived directly from life offices in this country, which can be relied on as indicating the rate of mort. among the assuring classes in recent years.

Mr. Neison then proceeded to speak of the Experience of the *Gotha Life*, which was available for the life offices on the Continent of Europe, and which was free from the objections he had just pointed out. [GOTHA LIFE ASSU. BANK, MORT. EXPERIENCE OF.]

Mr. Samuel Brown, in his paper *On the Collections of Data in various Branches of Assu.* pub. in *Assu. Mag.* vol. ii. p. 200 (1852), says:

> This T., prepared in 1841, though much credit is due for the labour gratuitously given, and the obs. so liberally supplied by the offices, is subject to several disadvantages. The obs. in many of the cos. refer only to pol.; whereas in the general results they are mixed up with those of the *Equitable* and *Amicable* Sos., which relate only to lives. Pol. may be dropped from various causes in a much more irregular manner than lives may fail; they may also be numerous in proportion to the lives in some offices, *by the prevailing practice of subdividing sums assu. to increase the number of new pol. effected in the year;* and at the termination of life, several pol. falling in with one or two lives may give the appearance of an unusual mort., which may not really be the case. The obs. in the Actuaries' T. are restricted, in the cases even of longest duration, to the first 23 years of the existence of the cos., and they are deficient in that point for which the *Equitable* and *Amicable* T. are so valuable, viz. as showing the increase of mort. after many years of membership. In other respects they are admirably arranged, and it is to be hoped will not only be continued to a more recent period, but form models of imitation for other cos. to follow.

Mr. John Finlaison, in his evidence before the Select. Parl. Committee on Assu. Asso. (1853), said, in reference to this T.: "I myself should count for six; I am assured in different offices six times. Then, if pol. are counted, and not individual lives, which is the case in the Actuaries' (Experience) T., while I live I count for six, and when I die I shall count for six deaths." Adding, "*A Table so constructed cannot be depended upon for Life Ins. purposes.*"

On the point raised by Mr. Finlaison, Dr. Farr, and other writers, it will be instructive to consult the art. ECONOMIC LIFE, MORT. EXPERIENCE OF.

In 1853 Mr. Elizur Wright, of Boston, U.S., who afterwards became widely known as one of the Insurance Commissioners of the State of Massachusetts, published by subscription: *Valuation Tables showing the ann., monthly, and daily values of policies at* 3 *and at* 4 *p.c. int. for all periods and ages from* 10 *to* 100. In view of exactness, the pol. were all assumed payable at age 100 by these T. The contract between the ins. co. and its pol.-holder is not in any way prejudiced by this assumption. A second and extended edition of these T. was pub. in Boston in 1871 (see 1858).

In 1857 Mr. William E. Hillman pub.: *Tables of the Value of a Pol. of Ins. for £*1, *according to the mort. indicated by the Carlisle obs., and also the Combined Experience of Life Ins. Cos., at* 3, 3½, *and* 4 *p.c. int., with preparatory T. for ascertaining the value of such ins. for every age from* 14 *to* 60 *years, and of duration from* 1 *to* 50 *years.* Under ACTUARIAL T. we have spoken of the serious number of errors there are in these Tables.

By an Act of the Gen. Court of the Commonwealth of Massachusetts (Laws of 1858, Chap. 177), it is required of each life ins. asso. issuing pol. in that State, to return to the Ins. Commissioners on the 15th Nov. every year, the data necessary for a net valuation of each of its pol. in force on the 1st of that month, as well as the usual statement of its other assets and liabilities due on that day. It was made the duty of the Ins. Commissioners to compute the value of the pol., and it was left to their judgment to select an appropriate Mort. T., and to fix a reasonable rate of int. The Commissioners, of whom Prof. Elizur Wright had then become one, selected this T. at 4 p.c. int. Their judgment having, at a later period, been challenged, the Commissioners, in their sixth Rep. pub. 1861, say:

> In adopting the "Combined Experience" or English "Actuaries" rate of mort. and 4 p.c. int. we supposed we were travelling most safely between extremes; and we have the pleasure to know that the fault found with our choice has been about equally divided, as much of it making our valuation too low as too high. . . . It is doubtless true, as Prof. M'Coy proves by example, that by the Combined Experience Mort., the value of pol. entered below the average age of ins. will be smaller for a few years than by Dr. Farr's T.; and this, so far as it has any effect, makes our valuation rather more favourable to new cos. than to old ones. But the aggregate value of pol. entered at all ages will not differ much from Dr. Farr's, and especially when the Co. has attained a few years standing. . . . . (See 1861 and 1863.)

In 1851 an investigation was made into the mort. experience of the *Mutual Benefit* of Newark, New Jersey—one of the largest and best conducted ins. asso. in the U.S.; and in 1859 a similar investigation was made into the mort. experience of the *Mutual* Life of N.Y., the largest ins. asso. in the U.S., for a period of 15 years. The mort. experienced in each case was found to correspond more nearly with that of the present than with that of any other known T.

Mr. A. G. Finlaison, in his *Rep. on Tontines and Life Annu.* 1860, repeats the objection urged by his late father, but adds:—"These T. have one merit, however. They show, subject to the above objection, the comparative value of male and female assured life, and of Town, Country, and Irish assured life."

Mr. W. M. Makeham contributed to vol. viii. of *Assu. Mag.* (1860), a paper: *On the Law of Mort., and the Construction of Annu. T.*; and therein he applies a special formula to this T., and compares the results with those resulting from the adjustment it originally received, and which would result from the adoption of Gompertz's method. (See p. 306.)

In 1861 there was read before the Inst. of Act. a paper: *On the Rate of Mort. prevailing amongst the Families of the Peerage during the* 19*th Century*; the joint production of Mr. A. H. Bailey and Mr. Archibald Day; wherein they say that, reviewing the anomaly presented by this T., when compared with all former obs. on female life, and considering the explanations which had been offered in support of its results, "none of them very satisfactory, and some altogether absurd," they had come to the conclusion that the anomaly did "not really exist at all"! and here is their reason for this statement:

> On looking more closely, and remarking that the objection often urged, that these T. represent the experience not of lives but of pol., is serious when the numbers are small, though not, perhaps, very important when they are large, we discover that the whole number of claims above the age of 70, under pol. on female lives, in all the combined offices, was exactly 60, and only 477 at all ages. And the actuaries themselves assign the paucity of the numbers as a reason for the apparent excess of the female mort. at the older ages, admitting that no importance is to be attached to this result. But as the facts were avowedly insufficient to bring out the peculiar tenacity of life of the female sex in old age, the result is perfectly consistent with other obs. Instead, therefore, of asserting that the "mort. amongst assured females, taking all ages together, is greater than amongst assured males," we think a more accurate statement would have been, that the experience of the offices confirms the result of other obs., which show the greater mort. of females during the child-bearing period, and affording little or no information for the periods of infancy and old age, it did not possess the means of exhibiting the general mort. of the sex. In corroboration of this may be adduced the valuable information furnished by the experience of the *Eagle* office, where the number of female deaths exceeded those of all the combined offices. [FEMALE LIVES, 1861.]

By an Act of the General Court of the Commonwealth of Massachusetts (Laws of 1861, Chap. 186), the rate of mort. of this T., with int. at 4 p.c. p.a., is designated as the standard by which the net value of *lapsed* or *forfeited* pol. of Massachusetts life ins. cos. shall be ascertained. (See 1863.)

Under the provisions of an Act passed by the State of Massachusetts (Laws of 1863, Chap. 148), it is enacted that whenever the actual funds of any life ins. co. doing bus. in said Commonwealth are not of a net cash value equal to its liabilities, counting as such the net value of its pol. according to the rule of valuation adopted in Chap. 186, Act of 1861 (above cited), it shall be the duty of the Ins. Commissioners to give notice to such co. and its agents to discontinue issuing *new* pol. in said State, until such time as its funds shall have become equal to its liabilities, valuing its pol. as aforesaid.

The following cos. transacting bus. in the State of New York had adopted the Experience T. No. 1 in the computation of their respective rates of prem. with int. at the rate of 4 p.c. p.a.: 1. *Equitable* Life; 2. *Guardian* Life; 3. *Washington* Life; 4. *Berkshire* Life; 5. *Massachusetts* Mutual Life; 6. *National* Life. The *Germania* Life based its rates of prems. for endowments for adults upon this T., at 5 p.c. int. p.a.

Mr. Sprague said in the Bonus Rep. of the *Equity and Law*, presented to the proprietors in 1865, that the *Experience* T. No. 1 had been used in the valuation, adding, "The reserve obtained by the use of this T. is considerably larger than that given by any of the other T. commonly employed."

In 1871 Mr. Walter C. Wright, Act. of *New England Mut. Life*, pub. a series of T. under the title *Cost of Ins.* These were deduced from the *Experience* T. No. 1, int. at 4 p.c. Mr. Nathan Willey, Act., New York, pub. a condensation of the preceding, with some add. T., under title: *Cost of Ins.* We observe that this latter work is dated in May, 1870, while the former is dated only Jan. 1871; but it appears that Mr. Willey had had access to the Tables before pub.

Mr. James Meikle, in his *Obs. on the Rate of Mort. of Assured Lives, as Experienced by Ten Assu. Cos. in Scotland from* 1815 *to* 1863, says:

> The superiority of the T. prepared from the experience of seventeen offices—known as the *Actuaries*, T. of 1837 [1843]—over the *Carlisle* T. prepared from the register of the deaths, and an enumeration of the pop. of the town of Carlisle, nearly 100 years since, as expressing the mort. of assured lives, is made manifest by these diagrams [*i.e.* diagrams in his work now under notice].

In the *Ins. Times* of N. Y. for June, 1872, some orig. T. are given of the net values for each month of the first year of ins. at 4 p.c. for endow. pol. by equal ann. prems., payable at death or at a given age; computed by Henry W. Smith.

Mr. W. T. Thomson, in his *Address to the Actuarial* So. of Edinburgh, 1873, says:

> The T. of 1838 [1843] is well known to Actuaries, and we find it in use among various offices who have rendered their accounts under the Act of 1870. Shortly after it was pub. I employed it extensively, and found it on the whole satisfactory, but gave up the practical use of it after the pub. of the *National* Life T. in 1843-44, which latter I preferred. It has now been superseded as an "Experience" T. by the New Experience to which I have just alluded, and will probably fall gradually into disuse, as those who have been educated under it disappear.

This T. will be again particularly referred to under FEMALE LIVES; IRISH LIVES; MORT. T.; VALUATIONS FOR SURPLUS; and incidentally under numerous other heads.

EXPERIENCE MORT. T. No. 2 [1869].—This T. is frequently designated "Institute of Actuaries Experience T."; sometimes the "Twenty Offices Experience T."; sometimes the "New Experience." We have thought it more consistent to call it "Experience T. No. 2"; and any future investigations resulting in T. can be designated in numerical sequence.

The circumstances which led to the construction of this T. are set out in the preface to the vol. in which the T. appeared in 1869; and we shall follow the narrative there given.

Nearly a quarter of a century having elapsed since the period to which the combined experience of 17 life assu. offices [EXPERIENCE T. No 1] was collected, it began to be felt amongst actuaries and the managers of ins. cos. that a large mass of valuable materials had accumulated, which, if combined, would tend to throw further light on the law of mort. among assured lives; and on other points affecting the interest and prosperity of assu. cos.

The question having been discussed on several occasions both in Eng. and Scot., was brought before the Council of the Inst. of Act. on the 14th Jan. 1862, when the following resolutions were passed:

> 1. That it is very desirable to collect and combine, as far as possible, the experience of the life assu. cos. of the U. K. to the present time.
> 2. That a Committee be appointed to report on the best means of collecting such experience, with power to communicate with any other committee, or actuaries, or man. of cos., who may be disposed to assist in obtaining the required information.
> 3. That the Committee be composed of the following gentlemen, viz.:—Mr. Brown, Mr. Hodge, Mr. Bailey, Mr. Sprague, Mr. Day, Mr. Woolhouse, and the Hon. Secs. [of the Inst. Mr. John Reddish and Mr. J. Hill Williams].

To these were afterwards added Mr. Jellicoe and Mr. Tucker.

This Committee opened communication with the man. of some of the Scotch offices; and on the 26 May, 1862, a Committee was appointed on behalf of the Scotch cos. generally. This Committee consisted of Mr. Raleigh, Mr. Ramsay, and Mr. Wm. Smith. Application was made to the Faculty of Act. of Scot. that it should give its assistance: accordingly Mr. McCandlish, Mr. Chisholm, and Mr. Meikle were appointed as a Committee of that body to act in the matter, along with the Committee of the managers asso.

The Committees thus formed immediately set to work. The first object was to settle the form of schedule for the information required. It was soon recognized that the most convenient form was that of a card, which, containing the particulars for each life ins. in each office, would enable the whole to be compared and combined without fresh copying, and consequent liability to mistake.

To attempt extreme minuteness of detail from asso. in which the pol. regis. might be kept on different principles, and where the averages would be based upon such large numbers of returns as there was reason to expect, was felt by the majority of the Committee to be unwise. The chief features to be kept in view in the preparation of the returns were agreed to be :

A.—The first and most important point, that the cards should contain the name of the life assu., so that any person whose life was assured at the same time in more than one office might be counted once only during the period under obs. This is of greater consequence, as the considerable extension of life assu. bus. of late years has led not only to numerous pol. being effected on a single life, but (partly in consequence thereof, or by reason of the large assu. now effected) to the same life appearing either directly or by re-assurance in the books of different cos. The care which each co. might take in eliminating the subsequent pol. on one life, would greatly lighten the labour to be performed on combining the data of different cos.; but it would still leave a very laborious and important duty to be undertaken when the cards were brought together.

B.—The distinction of British, Irish, or Foreign lives was of less importance, since in the combined experience of several cos. the effects of a particular class of bus. would prob. merge in a general average not likely to affect materially the resulting law of mort. of assured lives of which we are in search.

C.—In so large a number of cases, to estimate the precise age in parts of a year was thought to involve more trouble and labour than such minute accuracy would repay. It was, moreover, of the utmost consequence to take this opportunity of correcting the defects of former obs., by obtaining the experience of the offices at the advanced ages of life. In former years it was not customary to record the day of birth in the books, and to have requested the cos. to look up old documents long put away, might have risked the loss of some of the most valuable fruits of the present labour. But, as in all cases the office age on entry is the age next birthday, it was decided that, on the whole, the current year of age, or office age at the date of assurance, would afford the means of approximating very closely to the actual age by the single assumption that the assured attained that age at the end of the year of entry.

D.—No great hope was entertained of being able to trace the effect of charging extra prems. for impaired health. According as the information as to health, habits, and family hist. is full or meagre, or the different circumstances under which the examination is made, or the special experience or judgment of the medical examiner, as to the cause for which an excess of prem. is to be charged, the rates on the same life may be found to vary widely; the same life being sometimes taken in one office at ordinary rates, and in another accepted only with a large add. to the prem. It is essential, however, to know if the life might be considered healthy or first class, or not; and this distinction constituted one of the facts to be stated.

E.—The date of entry and of exit, like the age at entry, it was considered would, in very large numbers, be so spread over the whole of the year that, for all practical purposes, the average period of obs. in each may be taken at half a year; and the date of entry and exit would consequently correspond with the middle of the current year of age.

F.—The mode of exit would be simply expressed by D. for death; S. for surrender; L. (lapsed) for exit by any other cause; and a merely horizontal stroke, thus ——, if living at the date of obs.

G.—It might be desirable to obtain the cause of death in a large number of cases, provided all the facts could be fully known, and could be compared with the family hist. of the individual, and properly classified and certified by competent medical authorities. But this would be to undertake an inquiry of too special a character for the gen. purposes of assu. bus. A few offices only have such facts recorded in a form to be easily accessible, or so as to be enabled to bring them together without much delay, and a large expenditure of time and labour.

Although the "Cause of Death" stands as one of the queries on the cards, the returns do not allow of the inquiry, however interesting, being further pursued in the present rep.

Such being the leading features of the investigation, as proposed by the Committee, we now proceed to note the steps by which these were carried out.

It was decided by the Council of the Inst. "That, as the most important question is the rate of mort. at the more advanced ages of assured lives, it would be useless on the present occasion to apply to cos. of less than 25 or 30 years' standing."

By way of contrast to the efforts which were made, in obtaining the data for *Experience* T. No. 1, to prevent the experience of any individual office from being known, we note a passage in the Rep. of the Scottish Joint Committee under date 9 Nov. 1863 :

> *Every office must find the ascertainment of its own experience exceedingly valuable;* and the importance of obtaining full information as to the rate of mort. at the more advanced ages renders it a matter of common interest to furnish, in approved form, whatever contribution of materials may be within the power of the Scotch offices to supply.

The Scotch Committees, indeed, were for making the most and the best of the occasion. In the Rep. by the Council of the Faculty of Act. under date 5 Jan. 1864, there occur the following para.:

> Where so much time and labour are to be expended, it seems very desirable that the information obtained should be as full as possible, and that arrangements should be made to exhibit the experience of the Scotch offices separately as well as in combination with that of the English offices.
>
> Proceeding on these views, and on the assumption that the Scotch offices would wish to have the orig. documents connected with the investigation retained in Scotland for future reference, the Council beg to suggest that the inquiry to be conducted in Scotland should on some points embrace more exact returns; and that in such a manner as to admit of the particulars required for combination with the English experience being readily extracted. . . .
>
> The experience of one large office shows a considerable difference in the mort. of Eng. and Scot.

The arrangement suggested by the Scotch Committee was ultimately carried out; and hence really two distinct mort. investigations resulted. The separate Rep. produced by the Scotch Committee will be reviewed in detail under SCOTTISH MORT. EXPERIENCE. We confine ourselves here to the Rep. of the English Actuaries, which, however, embodied the returns of such Scotch offices as will be hereafter enumerated.

The cards finally decided upon required the following details:

English Card.	Scotch Card.	
Policy Number.	Number.	
Life.	Life.	
British, Irish, or Foreign.	English, Scotch, Irish, or Foreign.	
Healthy or Diseased.	Healthy or Diseased.	
Year of Entry.	Date of Entry, 18—	Years in Force.
Year of Exit.	Date of Exit, 18—	Age n. b. d. etc.
Age at Entry.	Duration	
Age at Exit.	Date of Birth.	
Mode of Exit.	Age at Entry,—	
Cause of Death.	Age at Exit,—	
Remarks.	Mode of Exit.	
	Cause of Death.	
	Remarks.	

The cards were the same size, viz. 4⅜ inches by about 3 inches; but the Scotch cards all had a distinguishing mark. The Scotch Committee were to compile the data from their own cards before sending them to Lond.

The Committee again refer to the class of offices from whom they most desired returns:

> It will be noticed, that in order to determine the important question of the rate of mortality to be expected in an office when the effect of selection has to a great extent ceased, it was decided to seek the data on this occasion only from cos. of several years' standing. This requires to be particularly mentioned, as a very cordial desire to co-operate in the work was manifested by several other cos., whose offers would have been gladly accepted, if a greater number of facts had been deemed of value.

Finally the following list of 20 offices were determined upon:

Founded.	Name.	Founded.	Name.
1838	City of Glasgow.	1836	Northern.
1824	Clerical, Medical, and Gen.	1824	Palladium (supplied by Eagle).
1823	Edinburgh.	1797	Pelican.
1844	Equity and Law.	1831	Scottish Equitable.
1821	Guardian.	1841	,, National.
1838	Life Asso. of Scotland.	1837	,, Provident.
1720	London Assurance.	1824	,, Union.
1845	Lond. and Prov. Law.	1815	,, Widows.
1835	Metropolitan.	1825	Standard.
1823	North British.	1814	Union Life.

The cards were sent out soon after Feb. 1864. Some of the returns came in as early as Jan. 1865; and others at different dates thereafter to the end of 1867. One portion of the Scotch cards arrived in June, and the remainder in Nov. 1867. It was not thought necessary to take particular note of the number of cards as they arrived, since in the process of eliminating the cards showing subsequent pol. on one life, so many would have to be thrown out. But the total cards received was estimated at more than 180,000.

The returns were finally made up under the following arrangement:

	Entered.	Lived, or years of life entered on.	Died.	Discon-tinued.	Existing end of 1863.
Healthy Lives—Male	130,243	1,283,034	20,521	35,024	74,698
,, Female	16,604	161,417	3,335	5,507	7,762
,, Both	146,847	1,444,451	23,856	40,531	82,460
Diseased Lives—Male and Female	11,146	101,695	2,456	3,365	5,325
Lives exposed to Extra Risk from Climate and Occupation—Male and Female	2,433	16,503	409	1,480	544
Total.........	160,426	1,562,649	26,721	45,376	88,329

About 20,000 cards were thus thrown out; but these were brought into use in various ways afterwards, as we shall see.

The date to which the obs. were carried was generally to the end of 1863; and the total number of entries—160,426—was regarded as sufficient to allow of several valuable classes of T. being formed. The mean duration of pol. of all classes, deduced from the above figures,—by deducting half the entered, as well as half the deaths and discontinuances, from the number "lived," and dividing by the number entered,—was upwards of 9 years. In *Experience* T. No. 1 the average duration of the insurances was 8½ years.

The four great divisions into which the data was reduced, as shown by the preceding enumeration, were the following:—(1) Healthy lives—male; (2) Healthy lives—female; (3) Diseased lives—male and female; (4) Lives exposed to extra risk from climate, occupation, etc.; and we learn from the Rep. of the Committee some interesting details as to the difficulties which arose, and the manner in which they were met, in the process of classification.

The cards in each division were first sorted according to the name of the life insured, "with the view of comparing all the insurances on the same life, and treating them as a continuous one wherever possible." Instead of adopting a strictly alphabetical arrangement, it was found more convenient to arrange the names commencing with the same consonant, according to the first vowel contained in the name; those commencing with a vowel being in strict alphabetical order. Thus, all the names beginning with B were arranged into subdivisions, according as the first vowel was *a*, *e*, *i*, *o*, *u*, or *y*—the names in each subdivision being in strict alphabetical order.

All the persons with the same surname being thus brought together, the next step was to sort those with the same surname, according to the Christian name: thus bringing together all the cards on which both surname and Christian name were the same.

In the case of noblemen, it was found that they were in some instances described on the cards by their titles only, and in others by their family names; so that when the alphabetical arrangement was completed, it was no uncommon thing to find cards relating to the same person in different parts of the arrangement, arising from the different titles he may have borne at various periods. For this reason all the cards with the names of noblemen on them were sorted out, and the family name and Christian name were found by reference to a "Peerage," and written on the cards. These were then replaced in the alphabetical arrangement according to the family and Christian names.

In this way all the cards were arranged in a definite order, so that any one could be readily found; and all the cards relating to the same person were brought together. It still remained, however, to go carefully through the cards, and examine whether those which bore the same surname and Christian name related to the same or different persons. This inquiry, the Committee say, would have been greatly facilitated if the *date of birth* had been given on the cards; but as this was not the case, it was necessary to compute approximately the year of birth from the year of entry and the age at entry. Occasionally, when the years of birth and the names were the same, the different dates of death, or the death of one when the other was marked as living, would indicate that the cards related to different persons. In some cases, still remaining doubtful, inquiry was made at the respective offices, and the doubt cleared up.

All the cards relating to the same person being thus brought together, the next step was to examine whether the ins. were *continuous* or not. If there were two assu. on the same life, such that an interval elapsed between the termination of the first assu. and the commencement of the second, the cards would be treated as if they related to the lives of different persons. But if the first assu. was still in force when the second was effected, then the two cards were placed in an envelope, on the outside of which were printed the same particulars as on the cards themselves. A similar process was followed when there were more than two assu. on the same life. The blanks on the envelope were then filled up from the cards, the date of the first assu. being taken as the date of entry, and the latest date to which the obs. extended being taken as the date of exit.

As regards persons exposed to extra risk in consequence of residence in a tropical climate, or military or seafaring service: the general rule was to include in this class all who were at any time whilst the pol. were in force charged an extra prem. But inasmuch as formerly extra prems. were charged for many places, such as Canada, for which no extra prem. is now required, it was agreed to disregard all such extra prems., *and to include in this class only those cases in which the place, for which an extra prem. was charged, is situated within* 33 *degrees of the Equator.*

In the cases where the extra risk did not commence until some time after the date of the pol., the effect of following the above rule would be to include in this class a certain number of years of life to which no deaths whatever correspond, and to withdraw the same number from the ordinary obs.; thus reducing improperly the rate of mort. in this class, and increasing it in the obs. of ordinary risks. In order to obviate this, as far as possible, it was decided that when the date of the commencement of the extra risk was stated on the card, the life was included up to that date in the ordinary risk obs., and omitted entirely from the extra risk class. It is, however, believed that the possible error from this course is extremely small; as in the great majority of cases the extra risk commenced almost immediately from the date of the pol., and the average time which elapsed between the date of the pol. and the commencement of the extra risk is extremely small. From an examination of the cards furnished by two offices, it was found that in one instance, where 227 persons had been exposed to extra risk, in the case of 133 the extra risk commenced from the date of the ins., and the remaining 94 had been under obs. for 505 years in all—or on the average, for 5⅓ years each, before the extra risk commenced; so that on the average of all the cases, there was an interval of 2¼ years between the date of the ins. and the commencement of the extra risk. In the second instance, where the number of persons so exposed to extra risk was 192, it was found that with 139 the extra risk dated from the commencement of the assu., and the remaining 53 had been under obs. for 234 years in the aggregate before the commencement of the extra risk, or not quite 4½ years each on the average of all the cases, between the date of assu. and the commencement of the extra risk.

The next step was to sort the cards into three other groups, according as they had passed out of obs. by *death*, or by *discontinuance*; or were still *living*, and under obs. This was a simple process. The three groups had next to be arranged into smaller groups in regard to *age at entry*, and the *age at exit* respectively. The number of cards in each subdivision was now counted twice over, in order to insure perfect accuracy—the attention of the computer being in one counting directed to see that the age at entry, and in the other that the age at exit, on all the cards in each group was the same.

The materials were thus obtained for an orig. T. of obs. The data are found recorded in detail in the "Summary T." supplied, in order to "enable any one interested in the subject to pursue any particular course of inquiry to which they are open, and to rearrange the materials at will." Before we speak of the T. in detail, we had better draw especial attention to the following explanatory para.:

> In the T. which are deduced from the orig. obs. showing the number exposed to risk, and the number who died in each year of assu. for each age of entry, and in all the subsequent T., it must be particularly noticed that the age against which the facts stand is no longer the current age, but the actual age past. The deaths in the current year of age, say 41st year, being between 40 and 41, are set against the number "exposed to risk" at age 40, and so for all other cases. . . .
>
> The number "exposed to risk" was obtained in the first year of assu. by taking half the number who entered in the year of age, less half the number who discontinued in the same year. In the second year of assu. it was found by deducting from the number who entered on the second year of assu. half the number who discontinued during that year. . . .
>
> This explanation applies to the whole of the four T. above enumerated, and as the number "exposed to risk" and "number who died" are given in each year of assu., for each age of entry, they allow of the question as to the law of mort. being investigated in any desired combination of ages or periods of assu. with the least possible labour, and without any superfluous cols. to distract the attention.

In order to distinguish the T. easily for use and quotation, they are designated **H** for healthy lives, and **D** for diseased lives, with a smaller letter above to denote the sex, thus, **H^{M} Healthy Lives—Male; H^{F} Healthy Lives—Female; H^{MF} Healthy Lives—Male and Female; D^{MF} Diseased Lives—Male and Female.**

The third of these T.,—Healthy Lives, Male and Female,—the Committee say, "may be fairly considered as the standard T. for life assu." Their reasons are: The large number of entrants, 146,847; the number exposed to risk for a year of life, 1,350,762; and the number of deaths, 23,856; are large enough to afford confidence in the results. The care which had been taken to eliminate subsequent pol. on the same life, and the general accuracy of the facts recorded, "*will prob. lead to its superseding all other T. for life assu. purposes.*" But, they add, "it will be important to bear in mind, that as an office grows older, and the proportion of new bus. to the total assu. in force diminishes, the benefit of selection will also diminish: *and for purposes of valuation and making reserves, it would be advisable to give special attention to this point in the adoption, for official use, of any T. which may be deduced from the orig. facts.*"

The mean duration of ins. of the lives embraced in this T., including those lives existing up to 31 Dec. 1863, had been 9·12 years. The proportion of females entered was 11·3 p.c. of the whole.

Of the	130,243 males,	15·8 p.c. died;	26·9 p.c. discontinued;	57·3 p.c. existing.
,,	16,604 females,	20·1 ,,	33·2 ,,	46·7 ,,
Total...	146,847	16·2	27·6	56·2

It is noticed that the proportion discontinued is precisely the same as in the *Experience* No. 1; though the proportion who died had increased from 9·7 to 16·2; and the proportion existing had diminished from 62·7 to 56·2 p.c.

Regarding the importance of the obs. in this T. as regards lives of 60 and upwards, it is only necessary to give a simple comparison of figures:

Experience T. No. 1—ages 60 and upwards.				*Experience* T. No. 2—ages 60 and upwards.			
Males	17,601	... Deaths	846	Males	142,715·5	... Deaths	7741
Females	3,884	... ,,	179	Females	32,814	... ,,	1741
Total ...	21,485			Total ...	175,529·5		9482

—being more than eight times the number exposed to risk, and more than nine times the number of deaths.

Of the four principal T. corresponding with the four principal divisions of the inquiry already named, we have already given that relating to diseased lives under DISEASED AND IMPAIRED LIVES. We propose to give that relating to healthy female life exclusively under FEMALE LIFE; and, by way of contrast, we shall, under the same head, give the

T. for healthy male life. The only T. we propose to give in extenso here is that for healthy lives, male and female combined; which, as we have seen, is regarded by the Committee as being of by far the greater importance.

In order, however, to obtain a complete view of the range of all the resulting T. at one glance, we propose to give abstracts of the several T., and to compare these with the results of *Experience* T. No. 1, and of the *Carlisle* T. The first example shows the numbers living at decennial periods out of 10,000 entering each class at age 10.

Age.	Living out of 10,000 Entering at Age 10.				*Carlisle* T.	*Experience* T. No. 1.
	Healthy Males.	Healthy Females.	Healthy Male & Female Combined.	Diseased Male & Female Combined.		
10	10000	10000	10000	10000	10000	10000
20	9616	9408	9554	9679	9427	9327
30	8987	8519	8904	8548	8734	8629
40	8223	7574	8128	7544	7856	7865
50	7274	6620	7183	6426	6806	6952
60	5898	5525	5847	4832	5639	5597
70	3793	3799	3805	2785	3717	3584
80	1392	1464	1411	898	1475	1329
90	150	186	159	57	220	132

It will be noticed that at age 40 the diseased lives and the healthy female lives show nearly the same decrement, 7544 of the former, and 7574 of the latter remaining, against 8223 healthy males, out of 10,000 assumed to enter at age 10. But after that age the diseased lives rapidly diminish by death, being reduced to 2785 at age 70; whilst the healthy females, 3799, are almost exactly the same as the healthy males, 3793.

The next example shows the *Expectation* of life in each class by these T., at decennial ages, in comparison with that shown by other well-known T., some of which we have added:

Age.	Healthy Males.	Healthy Females.	Healthy Males & Females combined.	Diseased Males & Females combined.	*Northampton* T.	*Carlisle* T.	Davies *Equitable* Exp.	*English* T. No. 1. (Persons).	*Experience* T. No. 1.
10	50·3	48·2	49·9	45·6	39·7	48·8	48·8	47·4	48·4
20	42·1	40·9	42·2	36·8	33·4	41·5	41·0	40·3	41·5
30	34·7	34·6	34·8	31·0	28·2	34·3	33·9	33·6	34·4
40	27·4	28·2	27·6	24·5	23·0	27·6	27·4	27·1	27·3
50	20·3	21·6	20·5	18·3	17·9	21·1	20·8	20·5	20·2
60	13·8	14·9	14·0	12·6	13·2	14·3	15·0	14·0	13·8
70	8·5	9·1	8·7	8·2	8·6	9·2	9·8	8·7	8·5
80	4·7	5·6	4·9	5·0	4·7	5·5	5·3	5·0	4·9
90	2·4	3·3	2·7	4·1	2·4	3·3	2·6	2·7	2·1

It will be seen by this T. that the improvement in the latter part of female life tells so much, that though at age 10 the female expec. is only 48·2, whilst that of healthy males is 50·3: yet at age 30 the expec. is nearly the same for both sexes; and after that age the female expec. is considerably higher at all ages.

The following T. show the ann. mort. p.c.: (1) at the chief quinquennial periods of life; (2) during the early years of ins. and at various periods afterwards. T. corresponding to the second, for male and female life separately, will be found under SELECTION, INFLUENCE OF.

HEALTHY LIVES.—MALE AND FEMALE COMBINED.

Age.	*Exp.* No. 2, unadjusted.	*Exp.* No. 1.	*Carlisle* T.	Age.	*Exp.* No. 2, unadjusted.	*Exp.* No. 1.	*Carlisle* T.
15 to 19	·54	·71	·68	55 to 59	2·35	2·48	2·20
20 ,, 24	·71	·75	·70	60 ,, 64	3·38	3·52	3·68
25 ,, 29	·73	·80	·82	65 ,, 69	4·90	5·14	4·45
30 ,, 34	·85	·88	1·01	70 ,, 74	7·23	7·54	6·97
35 ,, 39	·97	·97	1·09	75 ,, 79	10·92	11·03	10·54
40 ,, 44	1·09	1·10	1·41	80 ,, 84	15·44	16·01	13·86
45 ,, 49	1·36	1·36	1·44	85 ,, 89	22·50	23·46	19·92
50 ,, 54	1·72	1·80	1·52	90 ,, 94	29·65	37·23	28·61

HEALTHY LIVES—MALE AND FEMALE COMBINED.

ANNUAL MORTALITY PER CENT. IN YEARS OF INSURANCE.

Ages.	0	1	2	3	4	Under 5	5 & upwards.	Under 10	10 & upwards.	Total.
20 to 24	·34	·68	·83	·85	1·01	·67	·90	·71	·64	·71
25 ,, 29	·26	·60	·79	·73	·95	·66	1·00	·73	·92	·73
30 ,, 34	·53	·59	·76	·90	1·03	·76	·97	·83	1·00	·85
35 ,, 39	·43	·70	·89	·96	1·01	·83	1·10	·93	1·17	·97
40 ,, 44	·37	·77	·95	1·04	1·19	·91	1·19	1·00	1·28	1·09
45 ,, 49	·72	1·00	1·18	1·29	1·46	1·17	1·44	1·25	1·52	1·36
50 ,, 54	·65	·86	1·52	1·78	1·28	1·28	1·85	1·52	1·90	1·72
55 ,, 59	1·04	1·74	1·78	1·77	2·33	1·81	2·47	2·10	2·52	2·35
60 ,, 64	1·03	2·29	2·69	3·39	3·12	2·71	3·50	3·05	3·55	3·38
65 ,, 69	1·42	2·69	2·59	5·00	4·79	3·63	5·06	4·35	5·11	4·50
70 ,, 74	2·03	5·24	7·38	5·77	5·12	5·51	7·35	6·51	7·40	7·23

NUMBER OF DEATHS ON WHICH THE PRECEDING PER-CENTAGES ARE COMPUTED.

Ages.	0	1	2	3	4	Under 5	5 & upwards.	Under 10	10 & upwards.	Total.
20 to 24	27	76	59	36	24	222	53	265	10	275
25 ,, 29	36	140	148	106	105	535	231	736	30	766
30 ,, 34	74	155	178	185	187	779	644	1297	126	1423
35 ,, 39	50	156	188	190	187	771	1197	1523	445	1968
40 ,, 44	31	132	155	164	180	662	1547	1389	820	2209
45 ,, 49	43	119	135	143	159	599	1858	1287	1170	2457
50 ,, 54	25	69	121	140	98	453	2090	1093	1450	2543
55 ,, 59	25	84	84	86	115	394	2257	933	1668	2651
60 ,, 64	12	61	75	97	93	338	2347	849	1836	2685
65 ,, 69	7	31	32	67	67	204	2246	605	1845	2450
70 ,, 74	3	18	27	25	26	99	1910	347	1662	2009

The following T. extends the obs. over longer periods :

HEALTHY LIVES—MALE AND FEMALE COMBINED.

Ages.	MORT. P.C.							
	YEARS OF INS.							
	0	0 to 4	5 to 9	10 to 14	15 to 19	5 and upwards.	10 and upwards.	Total.
20 to 24	·34	·67	1·00	·75	·30	·90	·64	·71
25 ,, 29	·26	·66	1·01	·96	·93	1·00	·92	·73
30 ,, 34	·53	·76	·97	1·03	·88	·97	1·00	·85
35 ,, 39	·43	·83	1·06	1·12	1·45	1·10	1·17	·97
40 ,, 44	·37	·91	1·10	1·27	1·32	1·19	1·28	1·09
45 ,, 49	·72	1·17	1·33	1·47	1·57	1·44	1·52	1·36
50 ,, 54	·65	1·28	1·75	1·86	1·88	1·85	1·90	1·72
55 ,, 59	1·04	1·81	2·35	2·59	2·48	2·47	2·52	2·35
60 ,, 64	1·03	2·71	3·33	3·38	3·88	3·50	3·55	3·38
65 ,, 69	1·42	3·63	4·83	5·29	5·29	5·06	5·11	4·90

It will be observed that though the ages 30 to 60 indicate an increasing rate for 15 years, and from 35 to 50 even for 20 years and upwards; yet the groups 5 years and upwards, 10 years and upwards, still differ comparatively slightly from each other, and approximate very nearly to the rates in the period of ins. 10 to 14 years. The rate of mort. in the first year of ins. exhibits great fluctuations; though it is extremely light at all ages.

The T. are arranged in this form mainly to show the effect of selection; and corresponding T. for male and female lives singly will be found under SELECTION, INFLUENCE OF.

The Committee consider the following T. fairly represents "what has been or will be the actual experience of most offices." It—in common with the three other principal T. resulting from the investigation—has been deduced from the "prob. of dying in a year, as obtained from the Summary T. of the number exposed to risk, and number who died at each age," *without any attempt at graduation.* The cols. of "Living" and "Dying" consequently present all the fluctuations of the orig. data. But as the facts were numerous enough in the first and third cases [Healthy Males, and Healthy Males and Females Combined], after the few early years, to afford average results, it was thought better to pub. them as they actually appeared, "*rather than by an enforced graduation to lose sight* *of any deviations for which some special cause might exist.*" On this latter point the Committee further remark:

> In comparing the results at which we have arrived with those of other T., *it must be borne in mind that these are orig. obs.*, from which the peculiar features of the T. have not been got rid of by any process of graduation. It might be interesting to examine them in connexion with the experience of particular cos., some of which have been printed in a form which would allow of the data being put together in the same groups of ages. The *Equitable* Experience, by Mr. Arthur Morgan; and that of the *Amicable*, by Mr. Galloway; of the *Scottish Amicable*, by Mr. Spens; and the "Experience of the 17 Offices," might be re-arranged into the same groups of ages and years of assu. as in the present T. But when so subdivided, the obs. would be too few in number in the separate groups of ages to allow of any definite conclusions being drawn from them; though the whole might be re-classified and compared in larger groups if it were thought desirable to pursue the comparisons. Other T. of orig. experience, such as that of the *Eagle*, by Mr. Jellicoe; of the *Economic*, by Mr. Downes; of the *Metropolitan*, etc., might be compared with the present totals at each age. All the T., however, should be examined in reference to the mode in which the facts were collected and arranged; and we should thus be led into a variety of comparisons and inquiries, which, however interesting, would far exceed the limits of this preface. It is thought better not to delay the pub. of the orig. facts, but to confine ourselves on the present occasion to a general account of the preliminary work, which has been thus far accomplished; and which, we believe, is given in a form to save much time and labour in the further investigations and comparisons, which are sure to arise from it.

Such of the T. and examples as relate more exclusively to *female* life will be found under FEMALE LIVES.

HEALTHY MALES AND FEMALES—COMBINED (*ungraduated*).

Age.	Exposed to risk.	Died.	RATIO OF 10,000.				
			Prob. of dying in a year.	Prob. of living a year.	Living.	Dying.	Expec.
0	43·5	...	...	...	...	...	57·64
1	96	...	...	...	...	...	56·64
2	123	1	...	...	...	...	55·64
3	150	2	...	...	...	...	55·09
4	176·5	...	...	...	...	...	54·83
5	218·5	1	...	...	...	...	53·83
6	267·5	3	...	...	...	...	53·08
7	326	...	...	...	...	...	52·67
8	416	1	...	...	...	...	51·67
9	517·5	1	...	...	...	..	50·80
10	620	6	·00968	·99032	10000	97	49·89
11	713	...	·00000	1·00000	9903	0	49·38
12	800·5	2	·00250	·99750	9903	25	48·38
13	914	2	·00219	·99781	9878	21	47·50
14	1101·5	7	·00635	·99365	9857	63	46·60
15	1309	7	·00535	·99465	9794	52	45·90
16	1569·5	3	·00191	·99809	9742	19	45·14
17	1914	7	·00366	·99634	9723	35	44·23
18	2396·5	14	·00584	·99416	9688	57	43·39
19	3137	25	·00797	·99203	9631	77	42·64
20	4116	25	·00607	·99393	9554	58	41·98
21	5440·5	37	·00680	·99320	9496	64	41·23
22	7344	45	·00613	·99387	9432	58	40·51
23	9662	76	·00787	·99213	9374	74	39·84
24	12234·5	92	·00752	·99248	9300	70	39·15
25	15087	84	·00557	·99443	9230	51	38·44
26	17957	131	·00730	·99270	9179	67	37·65
27	20976	148	·00706	·99294	9112	64	36·93
28	23829	192	·00806	·99194	9048	73	36·18
29	26762	211	·00788	·99212	8975	71	35·47
30	29482·5	248	·00841	·99159	8904	75	34·75
31	31749·5	243	·00765	·99235	8829	68	34·04
32	33890	298	·00879	·99121	8761	77	33·30
33	35731	299	·00837	·99163	8684	72	32·59
34	37451	335	·00895	·99105	8612	77	31·86
35	38863	331	·00852	·99148	8535	73	31·15
36	39992	368	·00920	·99080	8462	78	30·41
37	40616	394	·00970	·99030	8384	81	29·67
38	41165	427	·01037	·98963	8303	86	28·97
39	41542·5	448	·01078	·98922	8217	89	28·27
40	41683	421	·01010	·98990	8128	82	27·57
41	41385	445	·01075	·98925	8046	87	26·85
42	40836	443	·01085	·98915	7959	86	26·14
43	40138	439	·01094	·98906	7873	86	25·42
44	39303	461	·01173	·98827	7787	91	24·69

Age.	Exposed to risk.	Died.	RATIO OF 10,000.				
			Prob. of dying in a year.	Prob. of living a year.	Living.	Dying.	Expec.
45	38360	473	·01233	·98767	7696	95	23·98
46	37241	482	·01294	·98706	7601	99	23·27
47	36041·5	512	·01421	·98579	7502	106	22·57
48	34757	489	·01407	·98593	7396	104	21·89
49	33606·5	510	·01491	·98509	7292	109	21·20
50	32424·5	532	·01641	·98359	7183	119	20·51
51	31046	521	·01678	·98322	7064	118	19·84
52	29698	518	·01744	·98256	6946	121	19·17
53	28200·5	472	·01674	·98326	6825	114	18·50
54	26779·5	500	·01867	·98133	6711	125	17·81
55	25456·5	575	·02259	·97741	6586	149	17·14
56	23977	544	·02269	·97731	6437	146	16·53
57	22524	516	·02291	·97709	6291	144	15·90
58	21193·5	532	·02510	·97490	6147	154	15·26
59	19882	484	·02434	·97566	5993	146	14·64
60	18559	559	·03012	·96988	5847	176	13·99
61	17133	524	·03058	·96942	5671	174	13·42
62	15888	541	·03405	·96595	5497	187	12·83
63	14612	542	·03709	·96291	5310	197	12·26
64	13331	519	·03893	·96107	5113	199	11·72
65	12163	520	·04275	·95725	4914	210	11·17
66	11038	492	·04457	·95543	4704	210	10·65
67	9967·5	480	·04816	·95184	4494	216	10·12
68	8947	485	·05421	·94579	4278	232	9·61
69	7931	473	·05964	·94036	4046	241	9·13
70	7033·5	391	·05559	·94441	3805	212	8·68
71	6250·5	380	·06080	·93920	3593	218	8·16
72	5551·5	421	·07584	·92416	3375	256	7·65
73	4818	390	·08095	·91905	3119	253	7·24
74	4143·5	427	·10305	·89695	2866	295	6·83
75	3488	320	·09174	·90826	2571	236	6·56
76	2947	313	·10621	·89379	2335	248	6·17
77	2438·5	259	·10621	·89379	2087	222	5·85
78	2038·5	263	·12902	·87098	1865	240	5·48
79	1653	217	·13128	·86872	1625	214	5·22
80	1322	175	·13238	·86762	1411	186	4·93
81	1056	162	·15341	·84659	1225	188	4·61
82	836·5	126	·15063	·84937	1037	156	4·36
83	657	121	·18417	·81583	881	163	4·04
84	493·5	90	·18237	·81763	718	131	3·84
85	376·5	82	·21780	·78220	578	128	3·58
86	270	59	·21852	·78148	459	100	3·44
87	190	42	·22105	·77895	359	79	3·36
88	130·5	34	·26054	·73946	280	73	3·05
89	86·5	20	·23121	·71429	207	48	2·94
90	60·5	16	·26446	·73554	159	42	2·68
91	42	12	·28571	·71429	117	33	2·46
92	28·5	11	·38597	·61403	84	33	2·25
93	17·5	8	·45714	·54286	51	23	2·34
94	10	...	·00000	1·00000	28	0	2·90
95	9·5	1	·10526	·89474	28	3	1·90
96	8	5	·62500	·37500	25	16	1·06
97	2	1	·50000	·50000	9	4	1·00
98	1	1	1·00000	·00000	5	5	·50

This T is compiled from pp. 246, 277, and 281.

Finally we may state that Mr. J. E. Hopkinson, B.A., acting under the direction of the Committee of the Institute, was selected to undertake the practical conduct of the investigation. He was assisted by a staff consisting of Mr. Philip E. Hendriks, Mr. Wm. Curtis Otter, and Mr. J. F Sprague. Mr. Samuel Brown, as the then President of the Inst. of Act., appears to have exercised a general control over the work, and to have prepared the Intro. to the volume from which we have drawn the preceding outline. It speaks well for the staff that the completed T. were pub. within a year and a half of the complete returns of the data to the Inst.

The preceding details are drawn from the vol. pub. in 1869: *The Mort. Experience of Life Assu. Cos. Collected by the Inst. of Actuaries.* This vol. contains a classification of all the data relating to the investigation, and also the preliminary T., etc., etc.

Before this vol. was completed, Mr. Samuel Brown, the then President of the Inst. of Act., brought before that body a brief preliminary rep. on the general scope of results of the inquiry. The discussion which followed eliminated some instructive remarks.

Mr. A. H. Bailey said:

> Coming now to the actual results, and remembering the defects of the old experience, we have now for the first time facts recorded relating to more than 160,000 lives, representing probably 200,000 pols. the proportion of pol. to lives being about four to three. The work of eliminating the duplicate and triplicate lives was amongst the most laborious part of our undertaking, but at the same time, it seems to me, most necessary. The returns have been classified into healthy males, healthy females, and the two combined as healthy lives, diseased lives without distinction of sex, and there are 2433 lives that have been exposed to extra risks, of which, to my disappointment, little use can, I fear, be made. We have now the means of learning, for the first time I think, as far as assured lives are concerned, the relative mort. of the sexes. It was a singular result of the old experience, that, throughout, the mort. of females was stated to be greater than that of males, contrary to all preconceived observation; and, consequently, the mean duration of life of females was, throughout, less than that of males. That was a startling result, but it was arrived at from very scanty materials, there being less than 500 female deaths in the old experience. But now that we have got proper information, we see that under the age of 45 female mort. is in a marked degree in excess of male, from 45 to 50 they are nearly identical, and above 50 the mort. of females is very much less than the mort. of males. This is a matter which it is well worth our while to study.

Mr. F. Hendriks said:

> We have before us a most valuable series of obs. brought down 23 years later than those of the seventeen offices. It is very interesting to many of us, who follow out these obs. chronologically, to be able to see whether alterations in the general value of life in the country have or have not had any marked effect upon the mort. experience of life assu. offices; that is to say, whether, by comparing the mort. at every age, we find the improvement which is asserted to exist in the vitality of the country is equally discernible in the returns of our assu. offices.

Mr. T. B. Sprague said:

> We are very much indebted to Mr. Brown for having taken the pains to go through what is rather a tedious and laborious work—namely, that of describing the mechanical and other processes employed to collect and arrange these facts. I think that is not by any means the least important part of the paper; for these processes, being carefully described, will be on record permanently, and a most valuable assistance to others who may wish to follow our example. . . . I think that on the whole there is no doubt we shall find that on the average we must increase the reserves we make for our pol. The general result as regards male lives is that, from the age of above 50 or 55, the mort. in this new T., after the effect of selection has worn off, is very much the same as it was in the old experience T.; but the average altogether certainly shows a much lighter mort. than the old experience. Not the least important part of this paper will be the facts relating to female lives.

In vol. xvi. of *Assu. Mag.* (1870), Mr. Wm. Sutton, B.A., offers some criticisms on several scientific points in connexion with these T. He also says:

> The T. of Mort. . . . appears to coincide to a great extent with the T. formed . . . from the "Experience of the 17 Offices." In fact, this part of the investigation has been chiefly valuable as verifying and confirming the "Experience" T. [No. 1], and redeeming it from the reproach directed against it by many act., that it was based upon pol., not lives. We may therefore take it for granted that, with respect to ordinary T. of Mort., the new experience obs. *will not advance us far beyond the stage already reached.*

In 1870 Mr. W. S. B. Woolhouse read before the Inst. of Act. a paper: *Explanation of a New Method of Adjusting Mort. T.; with some Obs. upon Mr. Makeham's Modification of Gompertz's Theory*, wherein occurs the following passage:

> In compliance with the express desire of the Experience Committee, I have recently adjusted the graduation of the new Experience T. of Mort. for healthy lives. The required operation and the conditions attending it, not merely possessing the interest excited by an unusual speciality, which I have discussed on former occasions, but being one of very great practical importance, inasmuch as the adjusted T. are eventually to form the basis of an extensive superstructure of other T., I could not refrain, at the outset, from giving to the subject a renewed and independent consideration. The grand desideratum is that of obtaining a continuous curve, or properly graduated T., which shall, as closely as possible, represent the actual facts derived from the obs. After thoroughly testing various schemes for accomplishing this object, I have at length succeeded in devising a method that is both satisfactory in principle and efficient in practice. As the method finally determined upon and adopted may be applied with the greatest facility to all analogous cases of adjustment, and promises to be one of very general utility, it has been considered advisable to present a detailed explanation of the process to the members of the Inst.

This "detailed explanation" is then given, in a very lucid and philosophical form. The method thus became open to challenge, and adverse criticism; but as a matter of fact it was received with expressions of general approval; and hence the "Experience Committee" felt confirmed in the approval they gave to it, as hereafter appears. The paper appeared in *Assu. Mag.* vol. xv. p. 389.

In vol. xvi. of *Assu. Mag.* (1871), appeared a letter from Mr. Wilfred A. Bowser, embodying "a T. of Mort. deduced from the New Experience Obs. H^{MF}." The writer says:

> Having recently constructed a T. of Mort. based upon the healthy male and female obs. pub. by the Inst. of Act., from which the number exposed to risk, and the deaths, during the first 3 years of assu., *i.e.* years 0, 1, and 2, have been eliminated, I beg to place the same at your disposal for insertion in the *Journal* of the Inst., should you consider the T. sufficiently interesting and useful for pub. It has been very carefully prepared, and has been graduated by the "new method of adjusting Mort. T." proposed and explained by Mr. Woolhouse in the last vol. of the *Journal.* [This is the art. already quoted by us.]

The Table will be found on p. 142 of the vol. named; and the student will find some of the points noted of much interest.

In the same vol. p. 428, is a communication from Mr. Samuel Brown, in which he says, "Having had, by the kind assistance of Mr. James Stark, jun., some monetary T. computed from the Table HMF of the Mort. Experience of Life Assu. Cos. collected by the Inst. of Act., I beg to place them at your disposal for pub. in the *Journal*. They are calculated at 3 and 4 p.c. from the T. of Mort. adjusted by Mr. Woolhouse on Makeham's modification of Gompertz's theory, the formation of which he has fully explained in the *Journal* [vol. xv. pp. 404–8—paper already quoted]; but I have used the logarithms throughout to 5 places only, considering them amply sufficient for ordinary official purposes."

The T. given are—1. An adjusted Mort. T. 2. A Commutation T. showing the value of life annu. at 3 p.c. 3. Values of Annu. on Two Joint Lives at Equal Ages, at 3 and 4 p.c. 4. A Commutation T. showing the value of life annu., int. 4 p.c.

Mr. James Meikle, in the Intro. to his *Obs. on the Rate of Mort. of Assured Lives as experienced by Ten Assu. Cos. in Scotland from* 1815 *to* 1863, pub. 1872, says:

> The *Carlisle* T. for purposes of life assu. will, it is anticipated, at no distant date become, like its predecessor, the *Northampton*, obsolete, and in place thereof the T. prepared by the Inst. of Act. from the joint experience of the English and Scottish offices to 1863, become the general basis of computation. Any improvement on that T. derived from future obs. will, it is thought, consist in giving effect to that character of the mort. which seems to be experienced by assurants selected at each age. The result would be an increase of the prems. for assu. at the younger ages, and a very considerable increase on the "reserve values" of all pol.

In 1872 there was pub.: *Inst. of Act. Life T.: T. deduced from the Mort. Experience of Life Assu. Cos., as collected and arranged by the Inst. of Actuaries of Gt. Brit. and Ireland: with an Introduction explanatory of the Construction and Application of the T., and an Appendix containing a Complete System of Notation for Life Contingencies. Pub. by the authority and under the superintendence of the Inst.* In the preface it is stated:

> As a preliminary to the determination of the classes of monetary T. to be computed, it was considered important—1. That the T. of Mort. deduced directly from the obs. should be *graduated* in such a manner as to preserve, to the utmost possible degree consistent with their practical use, all the orig. features of the obs. 2. That further investigations should be made into the question of the effect of *selection*, with the view of deciding whether distinct monetary T. should be given, applicable to assured lives from which that effect has in a great measure passed away.
>
> The graduation of the three T. HM, HF, and HMF, was kindly undertaken by Mr. Woolhouse, whose great skill and experience suggested to him a new method, *combining in a prob. unprecedented degree adaptation for all practical purposes, with close adherence to the orig. facts.* As this method cannot fail to be of great interest, the T., as adjusted by Mr. Woolhouse, together with his explanation of the process of adjustment, are printed at the end of the Intro.
>
> In order to examine more closely into the question of the effect of selection, a T. of Mort. was deduced from the obs. HM, excluding the years of assu. 0 to 4; this was similarly graduated by Mr. Woolhouse. It is designated by the symbol HM (5). The particular period adopted as most suitable generally for exclusion was determined by the marked difference in the classified orig. data, between the first 5 years of assu. and the subsequent periods.
>
> It was then decided, after a careful consideration of the whole subject, that commutation T. for single lives, and values of annu. to 4 places of decimals, at 3, 3½, 4, 4½, 5 and 6 p.c., should be deduced from the graduated HM and HF T. It was also decided that similar T. at 3, 3½, and 4 p.c. should be deduced from the HM (5) T. These were considered sufficient to afford to life assu. cos. a basis for approximate valuations of their position and prospects, independent of the influence of recent selection. The T. HMF has not been made a basis of calculation in the present vol.
>
> The T. for two lives comprise an entire set of joint life annu. for every combination of ages from (10, 10) upwards at 3, 3½ and 4 p.c., as being the rates generally sufficient for official calculations. The values of annu. on the last survivor of two lives for the same combinations of age are also given at the same rate of int., and by a simple arrangement fill up, with a new and valuable set of T., what would otherwise have been a great waste of space in the joint life cols.

The laborious and responsible task of superintending the computation and printing of all these T., it is added, "was undertaken in the most disinterested manner by Mr. Peter Gray, whose name will be accepted as a guarantee of the accuracy and consequent value of the completed results."

To the T. themselves Mr. Gray has written an Introduction, fully explaining the methods of formation and various modes of their application. This we now proceed to notice. He says: "The orig. T. commence at age 0, with a radix of 10,000. The new T. on the other hand commence with a radix of 10,000 at age 10; the numbers observed upon between ages 0 and 10 being considered too small to afford trustworthy results; and therefore the numbers living, in corresponding T., do not admit of being directly compared." It will be shown hereafter how closely the results of the graduated T. are assimilated to those of the T. from which they have been respectively deduced.

As regards the new table HM (5), Mr. Gray explains that it had been formed from the same data as HM "when modified by the exclusion from them of the experience of the first 5 years of assu." He adds, on this point, that in the case of the last-named T., the lives were brought under obs. at the date of ins., that is, at the period of their selection; but in the new T. they are not brought under obs. until they have been ins. 5 years [more exactly 4½ years, on the average]; and he adds: Hence, if recency of selection has any effect in modifying the rate of mort. in a community, this ought to become apparent on comparison of the results of the two tables. "And accordingly we find, on referring to the average durations, pp. 6 and 114, that those on the latter page, derived from the T. HM (5), are throughout less than those on the former, derived from the table HM. The difference, which at the outset is 1·83 years, remains nearly stationary for 12 terms, after which it gradually decreases; but it does not entirely disappear till the close of the series. The conclusion then is, that recency of selection exercises a by no means unimportant influence on the rate of mortality; and the measure of its effect in the present case is the series of differences between corresponding terms in the two sets of average durations now under consideration."

He points out that the deviations between the orig. $\mathbf{H^F}$ and the graduated $\mathbf{H^F}$ are "confined within less narrow limits than in the case of the $\mathbf{H^M}$ table. The cause of this is that the orig. $\mathbf{H^F}$ table contains more *asperities* than the orig. $\mathbf{H^M}$; and this again arises no doubt from the *comparative* smallness of the number of lives entered in the obs. on which it is founded. And it is to be borne in mind that the deviations (which legitimately arise in the process of graduation) are in the direction of softening down the asperities by which, like other results in orig. obs., the present T. is characterized. *The graduated T. may therefore be confidently accepted as an exponent of the law of mort. likely to prevail amongst a class similar to that subjected to obs.*"

We now propose to give the graduated $\mathbf{H^{MF}}$ T.; the graduated $\mathbf{H^M}$ and $\mathbf{H^F}$, arranged for purpose of comparison; and the $\mathbf{H^M}$ (5) T.; introducing into our arrangement of the cols. all such features as appear necessary for understanding the teachings of this last add. to our Mort. T., from which so much is expected.

EXPERIENCE T. No. 2.—*Healthy Males and Females Combined* (adjusted).

Ages.	Living.	Dying.	Prob. of surviving a year.	Prob. of dying in a year.	Ages.	Living.	Dying.	Prob. of surviving a year.	Prob. of dying in a year.
10	100,000	442	·99558	·00442	56	64,390	1414	·97804	·02195
11	99,558	407	·99591	·00408	57	62,976	1471	·97664	·02335
12	99,151	385	·99611	·00388	58	61,505	1531	·97510	·02489
13	98,766	376	·99619	·00380	59	59,974	1601	·97330	·02669
14	98,390	379	·99614	·00385	60	58,373	1677	·97127	·02872
15	98,011	396	·99595	·00404	61	56,696	1760	·96895	·03104
16	97,615	426	·99563	·00436	62	54,936	1849	·96634	·03365
17	97,189	469	·99517	·00482	63	53,087	1936	·96353	·03646
18	96,720	525	·99457	·00542	64	51,151	2014	·96062	·03937
19	96,195	581	·99396	·00603	65	49,137	2080	·95766	·04233
20	95,614	621	·99350	·00649	66	47,057	2138	·95456	·04543
21	94,993	645	·99321	·00679	67	44,919	2186	·95133	·04866
22	94,348	653	·99307	·00692	68	42,733	2224	·94795	·05204
23	93,695	651	·99305	·00694	69	40,509	2268	·94401	·05598
24	93,044	647	·99304	·00695	70	38,241	2331	·93904	·06095
25	92,397	647	·99299	·00700	71	35,910	2401	·93313	·06686
26	91,750	651	·99290	·00709	72	33,509	2469	·92631	·07368
27	91,099	668	·99266	·00733	73	31,040	2531	·91846	·08154
28	90,431	686	·99241	·00758	74	28,509	2567	·90995	·09004
29	89,745	703	·99216	·00783	75	25,942	2542	·90201	·09798
30	89,042	718	·99193	·00806	76	23,400	2476	·89418	·10581
31	88,324	726	·99178	·00821	77	20,924	2369	·88678	·11321
32	87,598	733	·99163	·00836	78	18,555	2247	·87890	·12109
33	86,865	743	·99144	·00855	79	16,308	2110	·87061	·12938
34	86,122	754	·99124	·00875	80	14,198	1969	·86131	·13868
35	85,368	768	·99000	·00899	81	12,229	1823	·85092	·14907
36	84,600	789	·99067	·00932	82	10,406	1672	·83932	·16067
37	83,811	811	·99032	·00967	83	8,734	1522	·82573	·17426
38	83,000	830	·98900	·01000	84	7,212	1360	·81142	·18857
39	82,170	844	·98972	·01027	85	5,852	1186	·79733	·20266
40	81,326	854	·98949	·01050	86	4,666	1014	·78268	·21731
41	80,472	860	·98931	·01068	87	3,652	849	·76752	·23247
42	79,612	869	·98908	·01091	88	2,803	689	·75419	·24580
43	78,743	888	·98872	·01127	89	2,114	548	·74077	·25922
44	77,855	913	·98827	·01172	90	1,566	435	·72222	·27777
45	76,942	948	·98767	·01232	91	1,131	336	·70291	·29708
46	75,994	989	·98698	·01301	92	795	247	·68930	·31069
47	75,005	1029	·98628	·01371	93	548	181	·66970	·33029
48	73,976	1067	·98557	·01442	94	367	131	·64305	·35694
49	72,909	1102	·98488	·01511	95	236	86	·63559	·36440
50	71,807	1133	·98422	·01577	96	150	56	·62666	·37333
51	70,674	1167	·98348	·01651	97	94	44	·53191	·46808
52	69,507	1204	·98267	·01732	98	50	33	·34000	·66000
53	68,303	1251	·98168	·01831	99	17	17	·00000	1·00000
54	67,052	1304	·98055	·01944	100	0	...	...	...
55	65,748	1358	·97934	·02065					

[Cols. 4 and 5 are each curtailed of 2 places on the right.]

EXPERIENCE T. No. 2.—*Healthy Males* (adjusted).

Age.	Living.	Dying.	Prob. of surviving a year.	Prob. of dying in a year.	Expec.	Monetary Values—4 p.c.			Age.
						Value of an Annu.	Single Prem.	Ann. Prem.	
10	100,000	490	·99510	·00490	50·29	20·076	·18936	·00898	10
11	99,510	397	·99601	·00399	49·53	19·982	·19298	·00919	11
12	99,113	329	·99668	·00331	48·73	19·864	·19750	·00946	12
13	98,784	288	·99708	·00291	47·89	19·728	·20275	·00978	13
14	98,496	272	·99723	·00276	47·03	19·577	·20855	·01013	14
15	98,224	282	·99712	·00287	46·16	19·416	·21473	·01051	15
16	97,942	318	·99675	·00324	45·29	19·251	·22108	·01091	16
17	97,624	379	·99611	·00388	44·43	19·087	·22742	·01132	17
18	97,245	466	·99520	·00479	43·60	18·927	·23354	·01171	18
19	96,779	556	·99425	·00574	42·81	18·779	·23923	·01209	19
20	96,223	609	·99367	·00632	42·06	18·643	·24446	·01244	20
21	95,614	643	·99327	·00672	41·32	18·513	·24949	·01278	21
22	94,971	650	·99315	·00684	40·60	18·384	·25446	·01312	22
23	94,321	638	·99323	·00676	39·87	18·251	·25957	·01348	23
24	93,683	622	·99336	·00663	39·14	18·110	·26498	·01386	24
25	93,061	617	·99337	·00663	38·40	17·960	·27074	·01427	25
26	92,444	618	·99331	·00668	37·65	17·803	·27677	·01471	26
27	91,826	634	·99309	·00690	36·90	17·640	·28305	·01518	27
28	91,192	654	·99282	·00717	36·16	17·473	·28947	·01566	28
29	90,538	673	·99256	·00743	35·41	17·303	·29600	·01617	29
30	89,865	694	·99227	·00772	34·68	17·130	·30265	·01669	30
31	89,171	706	·99208	·00791	33·94	16·954	·30943	·01723	31
32	88,465	717	·99189	·00810	33·21	16·773	·31639	·01780	32
33	87,748	727	·99171	·00828	32·48	16·587	·32357	·01839	33
34	87,021	740	·99149	·00850	31·74	16·394	·33096	·01902	34
35	86,281	757	·99122	·00877	31·01	16·196	·33858	·01968	35
36	85,524	779	·99089	·00910	30·28	15·993	·34639	·02038	36
37	84,745	802	·99053	·00946	29·56	15·786	·35436	·02111	37
38	83,943	821	·99022	·00978	28·83	15·574	·36250	·02187	38
39	83,122	838	·98991	·01008	28·11	15·357	·37085	·02267	39
40	82,284	848	·98969	·01030	27·39	15·134	·37943	·02351	40
41	81,436	854	·98951	·01048	26·67	14·904	·38830	·02441	41
42	80,582	865	·98926	·01073	25·95	14·664	·39752	·02537	42
43	79,717	887	·98887	·01112	25·23	14·416	·40705	·02640	43
44	78,830	911	·98844	·01155	24·51	14·161	·41685	·02749	44
45	77,919	950	·98780	·01219	23·79	13·900	·42690	·02865	45
46	76,969	996	·98706	·01294	23·07	13·635	·43711	·02986	46
47	75,973	1041	·98629	·01370	22·37	13·360	·44745	·03114	47
48	74,932	1082	·98556	·01444	21·67	13·094	·45792	·03249	48
49	73,850	1124	·98478	·01522	20·98	12·817	·46856	·03391	49
50	72,726	1160	·98405	·01595	20·30	12·536	·47938	·03541	50
51	71,566	1193	·98333	·01667	19·62	12·248	·49043	·03701	51
52	70,371	1235	·98245	·01754	18·95	11·954	·50174	·03873	52
53	69,138	1286	·98140	·01860	18·28	11·655	·51327	·04055	53
54	67,852	1339	·98026	·01973	17·61	11·350	·52496	·04250	54
55	66,513	1399	·97896	·02103	16·96	11·042	·53682	·04457	55
56	65,114	1462	·97754	·02245	16·31	10·731	·54880	·04678	56
57	63,652	1527	·97601	·02399	15·67	10·416	·56089	·04913	57
58	62,125	1592	·97437	·02562	15·05	10·099	·57309	·05163	58
59	60,533	1667	·97246	·02753	14·43	9·779	·58539	·05430	59
60	58,866	1747	·97032	·02967	13·83	9·459	·59773	·05715	60
61	57,119	1830	·96796	·03203	13·23	9·138	·61006	·06017	61
62	55,289	1915	·96536	·03463	12·65	8·818	·62237	·06338	62
63	53,374	2001	·96251	·03749	12·09	8·500	·63461	·06680	63
64	51,373	2076	·95959	·04041	11·54	8·184	·64675	·07041	64
65	49,297	2141	·95656	·04343	11·01	7·870	·65883	·07427	65
66	47,156	2196	·95343	·04656	10·48	7·556	·67089	·07840	66
67	44,960	2243	·95011	·04988	9·97	7·242	·68296	·08285	67
68	42,717	2274	·94676	·05323	9·47	6·928	·69507	·08767	68
69	40,443	2319	·94266	·05734	8·98	6·610	·70729	·09293	69
70	38,124	2371	·93780	·06219	8·49	6·293	·71950	·09865	70
71	35,753	2433	·93195	·06805	8·02	5·978	·73158	·10483	71
72	33,320	2497	·92506	·07494	7·57	5·671	·74339	·11142	72

Age.	Living.	Dying.	Prob. of surviving a year.	Prob. of dying in a year.	Expec.	Monetary Values—4 p.c.			Age.
						Value of an Annu.	Single Prem.	Ann. Prem.	
73	30,823	2554	·91714	·08286	7·14	5·376	·75474	·11836	73
74	28,269	2578	·90880	·09119	6·74	5·096	·76550	·12555	74
75	25,691	2527	·90163	·09836	6·37	4·832	·77566	·13298	75
76	23,164	2464	·89362	·10637	6·01	4·574	·78560	·14093	76
77	20,700	2374	·88531	·11468	5·67	4·323	·79525	·14938	77
78	18,326	2258	·87678	·12321	5·34	4·078	·80465	·15843	78
79	16,068	2138	·86694	·13305	5·02	3·838	·81391	·16822	79
80	13,930	2015	·85534	·14465	4·71	3·604	·82291	·17872	80
81	11,915	1883	·84196	·15803	4·43	3·382	·83144	·18972	81
82	10,032	1719	·82864	·17135	4·17	3·178	·83930	·20088	82
83	8,313	1545	·81414	·18585	3·93	2·988	·84659	·21225	83
84	6,768	1346	·80112	·19887	3·71	2·817	·85316	·22348	84
85	5,422	1138	·79011	·20988	3·51	2·657	·85931	·23492	85
86	4,284	941	·78034	·21965	3·31	2·498	·86544	·24738	86
87	3,343	773	·76877	·23123	3·10	2·329	·87193	·26186	87
88	2,570	615	·76070	·23930	2·88	2·151	·87878	·27883	88
89	1,955	495	·74680	·25319	2·63	1·941	·88686	·30148	89
90	1,460	408	·72054	·27945	2·35	1·703	·89600	·33137	90
91	1,052	329	·68726	·31273	2·07	1·459	·90541	·36815	91
92	723	254	·64868	·35131	1·79	1·208	·91506	·41438	92
93	469	195	·58422	·41577	1·49	·937	·92549	·47775	93
94	274	139	·49270	·50730	1·20	·668	·93583	·56095	94
95	135	86	·36296	·63703	·93	·410	·94574	·67043	95
96	45	40	·18367	·81632	·68	·176	·95474	·81143	96
97	9	9	·00000	1·00000	·50	...	·96153	·96153	97

[In cols. 4, 5, 6, 7, 8, and 9, the figure of the last decimal place given in the orig. is here omitted.] Corresponding monetary T. at other rates of int., viz. 3, 3½, 4½, 5, and 6 p.c., are given in the vol.

EXPERIENCE T. No. 2.—*Healthy Females* (adjusted).

Age.	Living.	Dying.	Prob. of surviving a year.	Prob. of dying in a year.	Expec.	Monetary Values—4 p.c.			Age.
						Value of an annu.	Single Prem.	Ann. Prem.	
10	100,000	314	·99686	·00314	48·19	19·373	·21642	·01062	10
11	99,686	420	·99578	·00421	47·34	19·211	·22263	·01101	11
12	99,266	510	·99486	·00513	46·54	19·064	·22829	·01137	12
13	98,756	581	·99411	·00588	45·78	18·929	·23348	·01171	13
14	98,175	632	·99356	·00643	45·05	18·803	·23834	·01203	14
15	97,543	667	·99316	·00683	44·33	18·681	·24300	·01234	15
16	96,876	683	·99295	·00705	43·64	18·563	·24757	·01265	16
17	96,193	680	·99293	·00706	42·94	18·442	·25220	·01297	17
18	95,513	659	·99310	·00690	42·24	18·316	·25704	·01330	18
19	94,854	635	·99330	·00669	41·53	18·181	·26223	·01367	19
20	94,219	648	·99312	·00687	40·81	18·036	·26782	·01406	20
21	93,571	682	·99271	·00728	40·09	17·887	·27354	·01448	21
22	92,889	736	·99208	·00792	39·38	17·740	·27922	·01490	22
23	92,153	813	·99117	·00882	38·69	17·597	·28473	·01531	23
24	91,340	899	·99015	·00984	38·03	17·463	·28985	·01569	24
25	90,441	978	·98918	·01081	37·40	17·342	·29450	·01605	25
26	89,463	1018	·98862	·01137	36·81	17·233	·29870	·01638	26
27	88,445	1045	·98818	·01281	36·23	17·129	·30271	·01669	27
28	87,400	1050	·98798	·01101	35·65	17·027	·30663	·01700	28
29	86,350	1032	·98804	·01195	35·08	16·924	·31061	·01733	29
30	85,318	1011	·98815	·01185	34·50	16·813	·31485	·01767	30
31	84,307	987	·98829	·01170	33·91	16·696	·31938	·01804	31
32	83,320	964	·98843	·01157	33·30	16·569	·32424	·01845	32
33	82,356	960	·98834	·01165	32·69	16·434	·32945	·01889	33
34	81,396	954	·98828	·01172	32·07	16·293	·33488	·01936	34
35	80,442	946	·98824	·01176	31·44	16·145	·34054	·01986	35
36	79,496	946	·98810	·01190	30·81	15·991	·34648	·02039	36
37	78,550	946	·98795	·01214	30·17	15·831	·35264	·02095	37
38	77,604	946	·98781	·01219	29·54	15·665	·35902	·02154	38

Age.	Living.	Dying.	Prob. of surviving a year.	Prob. of dying in a year.	Expec.	Monetary values—4 p.c.			Age.
						Value of an Annu.	Single Prem.	Ann. Prem.	
39	76,658	946	·98765	·01234	28·89	15·493	·36565	·02217	39
40	75,712	950	·98745	·01254	28·25	15·314	·37253	·02283	40
41	74,762	953	·98725	·01274	27·60	15·129	·37965	·02353	41
42	73,809	955	·98706	·01293	26·95	14·937	·38702	·02428	42
43	72,854	958	·98685	·01315	26·30	14·738	·39467	·02507	43
44	71,896	962	·98662	·01338	25·64	14·532	·40260	·02592	44
45	70,934	966	·98638	·01361	24·98	14·318	·41082	·02681	45
46	69,968	963	·98623	·01376	24·32	14·096	·41935	·02777	46
47	69,005	958	·98611	·01388	23·65	13·865	·42826	·02880	47
48	68,047	953	·98599	·01400	22·98	13·622	·43758	·02992	48
49	67,094	950	·98584	·01415	22·30	13·369	·44734	·03113	49
50	66,144	956	·98554	·01445	21·61	13·103	·45755	·03244	50
51	65,188	975	·98504	·01495	20·92	12·827	·46817	·03385	51
52	64,213	1003	·98438	·01562	20·23	12·543	·47911	·03537	52
53	63,210	1037	·98359	·01640	19·54	12·251	·49031	·03700	53
54	62,173	1081	·98261	·01738	18·86	11·954	·50175	·03873	54
55	61,092	1116	·98173	·01826	18·17	11·652	·51336	·04057	55
56	59,976	1144	·98092	·01907	17·52	11·344	·52522	·04254	56
57	58,832	1170	·98011	·01988	16·85	11·027	·53740	·04468	57
58	57,662	1196	·97925	·02074	16·18	10·701	·54995	·04700	58
59	56,466	1231	·97819	·02180	15·51	10·365	·56288	·04952	59
60	55,235	1308	·97631	·02368	14·85	10·019	·57616	·05228	60
61	53,927	1395	·97413	·02586	14·19	9·673	·58948	·05523	61
62	52,532	1495	·97154	·02845	13·56	9·327	·60279	·05836	62
63	51,037	1601	·96863	·03136	12·94	8·984	·61597	·06169	63
64	49,436	1706	·96549	·03450	12·34	8·646	·62897	·06520	64
65	47,730	1784	·96262	·03737	11·77	8·314	·64177	·06890	65
66	45,946	1846	·95982	·04017	11·21	7·982	·65451	·07286	66
67	44,100	1914	·95659	·04340	10·65	7·649	·66734	·07715	67
68	42,186	1982	·95301	·04698	10·11	7·316	·68015	·08178	68
69	40,204	2050	·94901	·05099	9·59	6·983	·69293	·08679	69
70	38,154	2123	·94435	·05564	9·08	6·653	·70564	·09220	70
71	36,031	2232	·93805	·06194	8·58	6·327	·71818	·09801	71
72	33,799	2338	·93082	·06917	8·12	6·014	·73020	·10409	72
73	31,461	2425	·92292	·07707	7·68	5·720	·74153	·11034	73
74	29,036	2490	·91424	·08575	7·28	5·445	·75208	·11667	74
75	26,546	2518	·90514	·09485	6·92	5·194	·76173	·12296	75
76	24,028	2500	·89595	·10404	6·59	4·968	·77042	·12907	76
77	21,528	2363	·89023	·10976	6·30	4·767	·77816	·13491	77
78	19,165	2205	·88494	·11505	6·02	4·569	·78577	·14107	78
79	16,960	2024	·88066	·11934	5·74	4·370	·79344	·14774	79
80	14,936	1819	·87821	·12178	5·45	4·161	·80148	·15528	80
81	13,117	1621	·87642	·12358	5·13	3·927	·81046	·16446	81
82	11,496	1514	·86830	·13169	4·79	3·661	·82073	·17608	82
83	9,982	1450	·85473	·14526	4·44	3·384	·83134	·18959	83
84	8,532	1389	·83720	·16279	4·11	3·118	·84159	·20433	84
85	7,143	1326	·81436	·18563	3·81	2·874	·85099	·21966	85
86	5,817	1234	·78786	·21213	3·56	2·670	·85883	·23399	86
87	4,583	1086	·76303	·23696	3·39	2·524	·86442	·24523	87
88	3,497	903	·74177	·25822	3·29	2·441	·86763	·25211	88
89	2,594	707	·72744	·27255	3·26	2·423	·86834	·25368	89
90	1,887	519	·72496	·27504	3·30	2·464	·86676	·25022	90
91	1,368	368	·73099	·26900	3·36	2·534	·86404	·24444	91
92	1,000	232	·76800	·23200	3·41	2·606	·86129	·23883	92
93	768	138	·82031	·17968	3·30	2·529	·86425	·24487	93
94	630	117	·81428	·18571	2·91	2·206	·87666	·27337	94
95	513	107	·79142	·20857	2·46	1·818	·89159	·31634	95
96	406	104	·74384	·25615	1·98	1·389	·90809	·38001	96
97	302	102	·66225	·33774	1·49	·942	·92527	·47622	97
98	200	100	·50000	·50000	1·00	·480	·94304	·63686	98
99	100	100	·00000	1·00000	·50	·000	·96153	·96153	99

[In cols. 4, 5, 6, 7, 8, and 9, the figure of the last decimal place given in the orig. T. is here omitted.] Corresponding monetary T. at other rates of int., viz. 3, 3½, 4½, 5, and 6 p.c., are given in the vol.

HM (5).—Experience T. No. 2.—*First 5 years' experience omitted.*

Age.	Living.	Dying.	Prob. of surviving a year.	Prob. of dying in a year.	Expec.	Money Values—4 p.c.			Age.
						Value of an annu.	Single Prem.	Ann. Prem.	
10	10000	40	·99600	·00400	48·46	19·655	·20555	·00995	10
11	9960	34	·99658	·00341	47·65	19·523	·21062	·01026	11
12	9926	30	·99697	·00302	46·81	19·374	·21637	·01062	12
13	9896	29	·99706	·00293	45·95	19·210	·22267	·01101	13
14	9867	30	·99696	·00304	45·09	19·037	·22932	·01144	14
15	9837	32	·99674	·00325	44·22	18·859	·23617	·01189	15
16	9805	37	·99622	·00377	43·37	18·677	·24316	·01235	16
17	9768	43	·99559	·00440	42·53	18·498	·25005	·01282	17
18	9725	53	·99455	·00545	41·71	18·323	·25678	·01328	18
19	9672	65	·99328	·00672	40·94	18·160	·26304	·01372	19
20	9607	80	·99167	·00832	40·21	18·015	·26864	·01412	20
21	9527	92	·99034	·00965	39·55	17·893	·27334	·01446	21
22	9435	97	·98971	·01028	38·93	17·790	·27729	·01475	22
23	9338	100	·98929	·01070	38·33	17·694	·28099	·01503	23
24	9238	100	·98917	·01082	37·74	17·601	·28457	·01529	24
25	9138	96	·98949	·01050	37·14	17·505	·28825	·01557	25
26	9042	91	·98993	·01006	36·53	17·398	·29235	·01589	26
27	8951	89	·99005	·00994	35·90	17·278	·29696	·01624	27
28	8862	86	·99029	·00970	35·25	17·150	·30190	·01663	28
29	8776	83	·99054	·00945	34·60	17·011	·30725	·01705	29
30	8693	80	·99079	·00920	33·92	16·860	·31305	·01752	30
31	8613	79	·99082	·00917	33·23	16·698	·31931	·01804	31
32	8534	79	·99074	·00925	32·53	16·526	·32590	·01859	32
33	8455	78	·99077	·00922	31·83	16·348	·33276	·01918	33
34	8377	79	·99056	·00943	31·13	16·160	·33998	·01981	34
35	8298	83	·98999	·01000	30·42	15·966	·34742	·02047	35
36	8215	85	·98965	·01034	29·72	15·773	·35487	·02115	36
37	8130	87	·98929	·01070	29·02	15·575	·36246	·02186	37
38	8043	89	·98993	·01106	28·33	15·374	·37022	·02261	38
39	7954	89	·98981	·01118	27·65	15·168	·37815	·02338	39
40	7865	89	·98868	·01131	26·95	14·953	·38641	·02422	40
41	7776	88	·98868	·01131	26·26	14·729	·39502	·02511	41
42	7688	89	·98842	·01157	25·55	14·493	·40408	·02608	42
43	7599	90	·98815	·01184	24·84	14·250	·41345	·02711	43
44	7509	92	·98774	·01225	24·14	13·997	·42316	·02821	44
45	7417	96	·98705	·01294	23·43	13·738	·43314	·02938	45
46	7321	100	·98634	·01365	22·73	13·475	·44326	·03062	46
47	7221	104	·98559	·01440	22·04	13·208	·45353	·03192	47
48	7117	109	·98468	·01531	21·35	12·937	·46395	·03328	48
49	7008	114	·98373	·01626	20·68	12·663	·47446	·03472	49
50	6894	118	·98288	·01711	20·01	12·388	·48506	·03623	50
51	6776	122	·98199	·01800	19·35	12·108	·49583	·03782	51
52	6654	125	·98121	·01878	18·70	11·823	·50679	·03952	52
53	6529	130	·98008	·01991	18·04	11·531	·51801	·04133	53
54	6399	134	·97905	·02094	17·40	11·236	·52935	·04326	54
55	6265	139	·97781	·02218	16·76	10·936	·54092	·04531	55
56	6126	144	·97649	·02350	16·13	10·631	·55263	·04751	56
57	5982	150	·97492	·02507	15·51	10·323	·56449	·04985	57
58	5832	155	·97342	·02657	14·89	10·012	·57645	·05234	58
59	5677	161	·97164	·02836	14·29	9·696	·58858	·05502	59
60	5516	169	·96936	·03063	13·69	9·379	·60080	·05788	60
61	5347	176	·96708	·03291	13·11	9·062	·61297	·06091	61
62	5171	184	·96441	·03558	12·54	8·745	·62516	·06414	62
63	4987	192	·96150	·03850	11·98	8·431	·63725	·06756	63
64	4795	200	·95829	·04171	11·44	8·119	·64924	·07119	64
65	4595	205	·95538	·04461	10·92	7·811	·66108	·07502	65
66	4390	210	·95216	·04783	10·40	7·503	·67293	·07913	66
67	4180	213	·94904	·05095	9·90	7·196	·68476	·08354	67
68	3976	216	·95555	·05444	9·41	6·885	·69670	·08835	68
69	3751	218	·94188	·05811	8·92	6·573	·70871	·09357	69
70	3533	222	·93716	·06283	8·44	6·258	·72083	·09931	70
71	3311	227	·93144	·06855	7·97	5·945	·73288	·10552	71

Age.	Living.	Dying.	Prob. of surviving a year.	Prob. of dying in a year.	Expec.	Money Values—4 p.c.			Age.
						Value of an Annu.	Single Prem.	Ann. Prem.	
72	3084	233	·92444	·07555	7·52	5·637	·74469	·11218	72
73	2851	238	·91652	·08348	7·10	5·342	·75605	·11920	73
74	2613	241	·90776	·09223	6·70	5·062	·76683	·12649	74
75	2372	236	·90050	·09949	6·33	4·799	·77693	·13395	75
76	2136	231	·89185	·10814	5·97	4·543	·78679	·14193	76
77	1905	220	·88451	·11548	5·63	4·298	·79623	·15028	77
78	1685	210	·87537	·12462	5·31	4·053	·80563	·15941	78
79	1475	199	·86508	·13491	4·99	3·815	·81477	·16918	79
80	1276	186	·85423	·14576	4·69	3·587	·82356	·17952	80
81	1090	173	·84128	·15871	4·41	3·367	·83201	·19049	81
82	917	158	·82769	·17230	4·15	3·163	·83988	·20174	82
83	759	141	·81423	·18577	3·91	2·974	·84713	·21315	83
84	618	123	·80097	·19903	3·68	2·799	·85388	·22476	84
85	495	104	·78989	·21010	3·48	2·634	·86021	·23668	85
86	391	86	·78005	·21994	3·27	2·468	·86659	·24984	86
87	305	71	·76721	·23278	3·05	2·291	·87342	·26538	87
88	234	57	·75641	·24359	2·82	2·105	·88055	·28352	88
89	177	46	·74011	·25988	2·57	1·895	·88864	·30693	89
90	131	37	·71755	·28244	2·30	1·663	·89757	·33703	90
91	94	30	·68085	·31914	2·02	1·410	·90729	·37639	91
92	64	23	·64062	·35937	1·73	1·154	·91713	·42569	92
93	41	18	·56097	·43902	1·42	·874	·92791	·49510	93
94	23	12	·47826	·52173	1·15	·620	·93766	·57857	94
95	11	7	·36363	·63636	·86	·349	·94808	·70247	95
96	4	4	·00000	1·00000	·50	·000	·96153	·96153	96

[In cols. 4, 5, 6, 7, 8, and 9 the figure in the last decimal place given in the orig. is here omitted.]

Corresponding monetary values are given at 3 and 3½ p.c.

There are no survivorship ins. or endowment T. included in the vol.; nor any values for temporary or deferred annu. Indeed, it is clearly intimated that the collection of T. is by no means exhaustive; and that as a consequence there was room for the enterprising members of the Inst. to make fame by adding to the series of T. here given. A number of life offices liberally contributed towards the cost of producing the vol. now under notice.

Regarding Mr. Woolhouse's "explanation of the adjustment of the T.," it appears in the main to be a condensation of his paper in vol. xvi. p. 389 of the *Assu. Mag.* already noticed.

Mr. W. T. Thomson, in his Address before the Actuarial So. of Edin., delivered 1873, says of the work now under notice:

> The superintendence of the computation and printing of these T. was undertaken by Mr. Peter Gray, the mention of whose name is sufficient guarantee for their accuracy. This gentleman also wrote the Introduction, explaining the methods of formation and modes of application. The important part taken in the work by Mr. Gray makes it very nearly his work, and the knowledge that the labour comes from his hands gives it in my eyes, and I have no doubt in the eyes of all actuaries, additional value.

In 1873 Mr. R. P. Hardy pub. *Valuation T., based upon the "Inst. of Actuaries Mort. Experience* (HM) *T.," at* 3, 3½, 4, *and* 4½ *p.c.: comprising values of pol. for all durations; values of temporary annu. for all periods; single and ann. prems. for temporary assu. up to* 10 *years; T. for valuing endowment assu.; also values of pol. on the* HM (5) *T., at the same rates of int.; with other useful T. Calculated by the Arithmometer invented by M. Thomas* (*de Colmar*). The author says:

> Sharing in the general opinion that the T. recently deduced by the Inst. of Actuaries from the actual mort. experience that had been observed to prevail in life assu. trans., from not merely the latest but probably the best exponent of the value of assured life, I was desirous of testing to what extent results so based would necessitate a modification of the standards of value that had been heretofore adopted. After making some progress in preparing a set of interval values, it occurred to me as likely that other act. might be similarly engaged; and, consequently, that it would be generally convenient to the profession if a short and connected series of the results most commonly in use were pub., so that comparisons could be readily made with those derived from other T.
>
> My orig. plan did not then extend beyond printing a selection of such values as are most frequently needed; but upon my showing a draft of the scheme to friends, they encouraged me to extend the plan, stating that the complete tabulation of such functions as the 'value of a pol.' and the 'value of a temporary annu.' would be of very great utility, and well worth the additional trouble. Acting upon this suggestion, I resolved to make the canon as complete as reasonable limits would allow; and the present T. are the result.
>
> This extension of my plan led me to remember my long-dormant idea of employing the *arithmometer;* and as I felt I could scarcely hope to accomplish my task within a reasonable period without substantial mechanical aid, I resolved upon trying the machine. The results have confirmed entirely the opinion that I orig. formed, that the *arithmometer* is an invaluable aid, in point both of accuracy and

economy of time. I desire, however, to state that, as far as my present experience extends, I do not consider that this instrument can be safely used by wholly unskilled hands, nor by persons who are not familiar with the particular function they are tabulating.

He acknowledges his indebtedness to Mr. Peter Gray, "for many valuable suggestions, the result of long practical experience, unreservedly placed at my disposal by him throughout the progress of the work;" and to Mr. A. B. Adler, of the *Alliance*, "for very considerable personal assistance in the preparation of the T."

The work must be considered as one of considerable practical value.

EXPERIENCE T. No. 2.—*Healthy Males* (graduated).

From Mr. R. P. Hardy's T. (1873) we draw the following interesting details.

Age.	No. living out of whom 1 dies in a year.	Prob. lifetime.	Average duration of life of those living at specified ages in col. 1 and upwards.	Average age of those living at specified ages and upwards.	Average age at death.		Age.	No. living out of whom 1 dies in a year.	Prob. lifetime.	Average duration of life of those living at specified ages in col. 1 and upwards.	Average age of those living at specified ages and upwards.	Average age at death.	
					Of those now living of any specified age.	Of those now living at any specified age and upwards.						Of those now living of any specified age.	Of those now living at any specified age and upwards.
10	204·1	54·67	28·90	38·90	60·29	67·80	54	50·7	17·75	11·31	65·31	71·62	76·62
11	250·6	53·78	28·48	39·48	60·54	67·96	55	47·5	17·03	10·95	65·95	71·96	76·90
12	301·3	52·87	28·05	40·05	60·73	68·10	56	44·5	16·31	10·60	66·60	72·32	77·20
13	343·1	51·95	27·63	40·63	60·89	68·26	57	41·7	15·60	10·25	67·25	72·68	77·50
14	362·1	51·02	27·20	41·20	61·03	68·40	58	39·0	14·90	9·90	67·90	73·05	77·80
15	348·3	50·09	26·78	41·78	61·16	68·56	59	36·3	14·22	9·56	68·56	73·44	78·12
16	308·0	49·15	26·37	42·37	61·29	68·74	60	33·7	13·54	9·23	69·23	73·83	78·46
17	257·6	48·23	25·95	42·95	61·44	68·90	61	31·2	12·89	8·90	69·90	74·24	78·80
18	208·7	47·31	25·53	43·53	61·61	69·06	62	28·9	12·24	8·57	70·57	74·66	79·14
19	174·1	46·42	25·12	44·12	61·82	69·22	63	26·7	11·61	8·25	71·25	75·10	79·50
20	158·0	45·55	24·71	44·71	62·06	69·44	64	24·7	11·0	7·93	71·93	75·55	79·86
21	148·7	44·70	24·29	45·29	62·33	69·58	65	23·0	10·41	7·62	72·62	76·01	80·24
22	146·1	43·85	23·88	45·88	62·60	69·76	66	21·5	9·84	7·32	73·32	76·49	80·64
23	147·8	42·99	23·47	46·47	62·88	69·94	67	20·0	9·28	7·02	74·02	76·98	81·04
24	150·6	42·14	23·06	47·06	63·15	70·12	68	18·8	8·73	6·72	74·72	77·48	81·44
25	150·8	41·28	22·65	47·65	63·41	70·30	69	17·4	8·20	6·44	75·44	77·90	81·88
26	149·6	40·43	22·24	48·24	63·66	70·48	70	16·1	7·69	6·16	76·16	78·50	82·32
27	144·8	39·57	21·83	48·83	63·91	70·66	71	14·7	7·12	5·89	76·89	79·03	82·78
28	139·4	38·71	21·42	49·42	64·16	70·84	72	13·3	6·74	5·62	77·62	79·58	83·24
29	134·5	37·86	21·01	50·01	64·42	71·02	73	12·1	6·31	5·37	78·37	80·15	83·74
30	129·5	37·01	20·61	50·61	64·68	71·22	74	11·0	5·90	5·12	79·12	80·75	84·24
31	126·3	36·17	20·20	51·20	64·95	71·40	75	10·2	5·54	4·88	79·88	81·38	84·76
32	123·4	35·32	19·80	51·80	65·21	71·60	76	9·4	5·18	4·65	80·65	82·02	85·30
33	120·7	34·48	19·39	52·39	65·48	71·78	77	8·7	4·83	4·43	81·42	82·67	85·86
34	117·6	33·64	18·99	52·99	65·75	71·98	78	8·1	4·51	4·21	82·21	83·34	86·42
35	114·0	32·81	18·59	53·59	66·02	72·18	79	7·5	4·18	4·00	83·00	84·03	87·00
36	109·8	31·98	18·19	54·19	66·29	72·38	80	6·9	3·87	3·80	83·80	84·72	87·60
37	105·7	31·15	17·79	54·79	66·56	72·58	81	6·3	3·60	3·60	84·60	85·43	88·20
38	102·2	30·33	17·39	55·39	66·84	72·78	82	5·8	3·36	3·42	85·42	86·17	88·84
39	99·2	29·51	17·00	56·00	67·12	73·00	83	5·4	3·14	3·24	86·24	86·93	89·48
40	97·0	28·69	16·60	56·60	67·40	73·20	84	5·0	2·96	3·06	87·06	87·71	90·12
41	95·4	27·88	16·21	57·21	67·68	73·42	85	4·8	2·82	2·88	87·88	88·51	90·76
42	93·2	27·07	15·82	57·82	67·96	73·64	86	4·6	2·70	2·69	88·69	89·31	91·38
43	89·9	26·25	15·43	58·43	68·23	73·86	87	4·3	2·57	2·50	89·50	90·10	92·00
44	86·5	25·55	15·04	59·04	68·51	74·08	88	4·2	2·43	2·29	90·29	90·88	92·58
45	82·0	24·64	14·66	59·66	68·79	74·32	89	3·9	2·22	2·08	91·08	91·63	93·16
46	77·3	23·84	14·27	60·27	69·08	74·54	90	3·6	1·98	1·86	91·86	92·36	93·72
47	73·0	23·06	13·89	60·89	69·38	74·78	91	3·2	1·78	1·64	92·64	93·08	94·28
48	69·3	22·28	13·51	61·51	69·68	75·02	92	2·8	1·55	1·42	93·42	93·80	94·84
49	65·7	21·51	13·14	62·14	69·99	75·28	93	2·4	1·28	1·20	94·20	94·50	95·40
50	62·7	20·74	12·77	62·77	70·31	75·54	94	2·0	·99	1·00	95·00	95·20	96·00
51	60·0	19·99	12·40	63·40	70·63	75·80	95	1·6	·78	·80	95·80	95·93	96·60
52	58·0	19·23	12·03	64·03	70·95	76·06	96	1·2	·60	·63	96·63	96·68	97·26
53	53·8	18·49	11·67	64·67	71·28	76·34	97	1·0	·50	·50	97·50	97·50	98·00

EXPERIENCE TABLES OF MORT. (GENERALLY).—In our art. EQUITABLE SO., MORT. EXPERIENCE OF, we have furnished practical proof of the great anxiety which was evinced to obtain a Mort. T. based upon the actual experience of Insured Life. It remains for us to trace the progress of this desire from an early period; as also to review the opinions which have been expressed as regards the prob. results to be shown by Mort. T. thus deduced; and indeed generally to review the subject.

In 1742 the first Experience T. of which we have any knowledge was pub. by Herr Kerseboom, in Holland. It was not indeed based upon the records of insured life, in the ordinary acceptation of the term; but it purports to be deduced from the registers of many thousands of annuitants in Holland and West Friesland, which had been kept there from 125 to 130 years before he made them available. The T. and its hist. will be given under KERSEBOOM'S T. OF MORT.

In 1746 was pub. another Experience T. This again was not based upon the records of insured life, as ordinarily understood: but from the lists of nominees in two French tontines; and from supplemental data, partly of the same character. This was Deparcieux's T. of Mort., of which we have already given a detailed account under that head.

In 1778 we reach the first T. founded upon the records of insured life, in its true sense. This was the T. compiled by Mr. Brand from the records of the *Amicable* So. This T. has already been given under Amicable So., Mort. Experience of. It possesses to our mind an interest which no subsequent T. ever has possessed. In the first place, it was drawn from lives ins. in a pioneer asso., having no rules for guidance in the conduct of its bus., save such as were framed out of its own experience. In the next place, the lives had all been accepted without any *medical* selection, under the circumstances which have been stated in our hist. of the So. The reader will find a study of this T. instructive.

In 1811 another T. was compiled from the *Amicable* So. Experience,—this time by Mr. John Pensam, the Registrar of the So. Of it we have also given a brief account under Amicable So. Experience Tables.

We have seen under Equitable So., Mort. Experience of, that Mr. Griffith Davies, writing about 1825, considered the mort. experience of that So. afforded "more satisfactory data for determining the rate of mort. among assured lives than any regis. hitherto made public."

In 1826 Mr. Charles Babbage pub. a T. purporting to be based upon the experience of the *Equitable* So. We have already given a full outline of this T. under Equitable So., Mort. Experience of. In the work in which this T. appears—*A Comparative View of the Various Inst. for the Assu. of Lives*, 1826—occurs the following obs.:

> It appears that many and powerful circumstances combine to render the rate of mort. among a select class of assurers much less than that which occurs amongst the inhabitants of large towns; and admitting to the counteracting cause more weight than in my own opinion it deserves, still I think the reasons already stated—namely, the healthy state of life at the time of making the contract; the class of society in which assurers are found, exempting them from sources of unhealthiness occurring among the poor; the rejection of those who have not had the smallpox; of those who have had the gout or fits, and several other complaints; and, finally, the declaration of the party, corroborated by two friends, that he is not subject to any disease tending to shorten life, and that he is not in the practice of habits calculated to produce the same effect—strongly preponderate, and from their joint action we ought to expect that the law of mort. amongst a body of persons so selected should differ considerably from that which takes place in a large country.
>
> It is therefore to be expected, that the *Law of Mort.* which exists among assurers [the insured] should approach more nearly to that which takes place amongst select classes of mankind, such as amongst annuitants (where it is the interest of each proprietor to select a good life), than to more indiscriminate bodies of people. Although there exist good obs. of this kind, I am not aware of their having been employed as the basis of any T. of prems. for assu.

Some of his further remarks on this subject we have already given under Equitable So., Mort. Experience of; but there yet remains to be noted the following emphatic expression of his conviction:

> Undoubtedly the best table for regulating the affairs of assu. cos. would be *one formed from an enumeration of all the individuals who have been assu. at all the offices:* as none of the experience which has been thus acquired has been made public, we can only avail ourselves of such obs. as, having been incidentally made, lead directly to an approximation to such a T.

Mr. Francis Baily being asked by the Select Parl. Committee on Friendly Sos. in 1827: Should you consider that the T. of the ins. offices which relate generally to persons in a better class of life, would be applicable to persons in a poorer class of life? replied: I do not think the T. of the assu. offices are fit for that purpose; not for general use—they are picked lives.

In 1828 Mr. Wm. Morgan pub. in his *View of the Rise and Progress of the Equitable So.* a T., of which we have already given full details under Equitable So., Mortality Experience of.

In 1829 Mr. John Finlaison, the then Gov. Actuary, pub. the mort. experience of various classes of Gov. annuitants, and nominees in some of the State tontines—constituting a mass of most valuable information, concerning which we shall give full details under Government Annuitants Mort. T. (See 1860.) The T. pub. were understood to furnish but a small portion of the results obtained by the investigation.

In 1829 Mr. Charles Babbage, in a letter addressed to the Rt. Hon. T. P. Courtenay, urged upon him the importance of compiling and making public the mort. experience of the then existing life offices. We shall speak of this more at length under Mort. Obs.

In 1834 Mr. Arthur Morgan pub. two T. of the Mort. of the *Equitable* So. constructed from differing data. These we have given under Equitable So., Mort. Exp. of.

In 1835 Mr. Charles Ansell, F.R.S., then Actuary to the *Atlas* Assu. Co., contributed to the Library of Useful Knowledge: *A Treatise on F. Sos., in which the Doctrine of Int. of Money and the Doctrine of Prob. are practically applied to the affairs of such Sos.: with numerous T.; and an Appendix, containing the Acts of Parl. relating to F. Sos.* Among the T. were some formed from the actual experience of F. Sos. These will be more particularly referred to under F. Sos.; Mort. T.; Sickness.

As showing, in a very marked manner, the importance which was attached to obtaining Experience T. based upon more extended data than had yet been constructed, it will be interesting to place on record the following petition which was prepared under date June, 1837, in view of being presented to the House of Commons, together with the signatures thereto. That it was never presented prob. may be accounted for by some special intimation that its prayer could not be granted; or it may be that it was thought better to take steps, such as were taken a few years later, to collect the mort. experience from the leading offices, without the intervention of Parl.

The humble petition of the undersigned actuaries of life assu. offices in Lond. and of others connected therewith,—

Sheweth, That a very large proportion of the property of this country is held upon tenures depending upon the duration of human life, and that the bus. of life assu. has of late extended so as to affect the interests and future happiness of large numbers of all classes of the community.

That one of the principal elements in all calculations of the value of property depending on human life, and of the value of the risks of life assu., is the average duration of human existence, as determined by obs.: and the means by which such calculations are made or facilitated are T. of the value of life annu. deduced therefrom.

That as the accuracy of annu. and other T. founded on the rate of mort. depends upon the extent of the obs. from which they are derived, every add. to them is of national importance.

That to adjust equitably the value of Church property, and other life interests, to measure truly life assu. risks, and to afford the means of satisfying the public of the just application of correct principles in such valuations, it is highly necessary that every authentic information bearing upon the subject should be made generally accessible.

That very extensive T. have been calculated at the national expense, from data furnished by the Gov. Records, which were printed by order of your Hon. House in 1829; and that on these T. the Gov. now grant annu. on lives, and it has recently been proposed to your Hon. House that the value of Church property should be estimated by the same standard.

That of these T. a very limited portion only has hitherto been made available to the public.

Your petitioners, therefore, humbly pray that your Hon. House will be pleased to order the pub. of all T. founded upon the same data as those upon which the Gov. now grant annu. on lives. These T. will comprehend annu. on single lives for males and females separately, and on every combination of two or more joint lives, at every rate of int. at which they have been respectively computed. Signed,

Joshua Milne, *Sun* Life Office.
Arthur Morgan, *Equitable* Assu. So.
George Kirkpatrick, *Law* Life.
Charles Ansell, *Atlas* Assu. Office.
Griffith Davies, *Guardian* Office.
J. D. Bayley, *Royal Exchange*.
Benj. Gompertz, *Alliance* Office.
W. S. Lewis, *Rock* Life.
James J. Downes, *Economic* Office.
Samuel Ingall, *Imperial* Life.
Robt. Christie, *Universal* Life.
Thos. Lewis, *Union* Assu. Office.
J. M. Rainbow, *Crown* Assu. Office.
Thos. Galloway, Registrar, *Amicable* So.
E. Charlton, *Albion* Ins. Co.
W. Bury, *Hope* Assu. Office.
H. P. Smith, *Eagle* Assu. Office.
M. Saward, *Promoter* Life.
Rob. John Bunyon, *Norwich Union* Life.
M. Tate, *Pelican* Ins. Office.
Edward Hulley, *Globe* Office.
Henry Marshall, *Metropolitan* Office.
J. Tulloch, *Minerva* Life Office.
Charles Jellicoe, *Protector* Life.
John Robertson, *Argus* Life.
Ebenezer Fernie, *British Commercial*.
J. M. Terry, *Hand-in-Hand* Life.
John Lawrence, *London* Assu.
G. H. Hepple, *Standard of England*.
J. T. Clement, *Licensed Victuallers*.
Joseph Marsh, *National Provident*.
C. B. Smith, *National* Life.
Edwin James Farren, *Asylum* Life.
B. A. M. Boyd, *North British* Co.
J. C. C. Boyd, Sec., *United Kingdom*.
J. T. Barber Beaumont, *Provident* Life.
Charles M. Willich, *University* Life.
F. G. Smith, Lond. office, *Scottish Union*.
Charles Lewis, *West of England*.
David Foggo, *European* Life [No. 1].
T. R. Edmonds, *Legal and General*.
T. Pinckard, *Clerical, Medical*.

In Mr. T. R. Edmonds's art. in the *Lancet*, 28 Oct. 1837, *On the Influence of Age and Selection on the mort. of the members of the Equitable So. etc.*, that writer, while pointing out the advantages of the pub. of the mort. experience of that So., takes occasion to say:

In the Gov. Annu. Office there exist materials equal in value and extent to those now pub. by the *Equitable* So.; but the public have been able to obtain no information from their own handsomely paid servants; and they are indebted to the bounty of the *Equitable* So. for all the knowledge which they now possess respecting the influence of selection, etc.

In 1841 Mr. Galloway, the then Registrar of the *Amicable* So., pub. its experience for a further period of 33 years, viz. from 1808 to 1841. The resulting T. we have already given under AMICABLE SO., MORT. EXPERIENCE OF. [See 1778.]

In 1843 was pub. by the Committee of British Actuaries, who had undertaken the task, the Rep. of their investigation into the mort. experience of 17 life offices who had combined their experience for the purpose of that inquiry. The general results we have already given under EXPERIENCE T. NO. 1.

Mr. Jenkin Jones, in his *New Rate of Mort.*, 1843, says:

Supposing the *Carlisle*, or any other T., to represent accurately the mort. of the U. K., such a rate ought only to be used in the absence of the actual experience of the mort. amongst assu. lives; for offices do not take lives indiscriminately, but have the power of selection. Now, if an office is prudently conducted, all doubtful lives are rejected; and if it were possible to select *all* good lives, such a T. as the *Carlisle* would manifestly represent a mort. higher than that which would prevail amongst the lives actually assu. As there is also greater laxity in the selection of lives in some offices than in others, and as it will happen, even with the utmost vigilance exercised, that some unsound lives will be passed as eligible, it is manifest that a rate of mort. deduced from the combined experience of various life offices, is the most consistent, and the safest basis upon which the rates of assu. ought to be determined.

Dr. Farr said, in the 5th Rep. of Reg.-Gen. 1843:

In the course of a century or of half a century, from the obs. on a great number of assu. lives, a T. can be constructed, which will be a most valuable contribution to statistical science, and enable competent men to decide whether a T. of the mort. prevailing among the insured lives during the 19th century is more likely to express the mort. of the persons who insure their lives in the 20th century, than a life T. deduced from the living, and from the deaths in the pop. of that day.

Mr. Charles Ansell, in giving evidence before the Select Parl. Committee on Joint-Stock Cos. 1841-4, said, in reply to questions by the members of the Committee:

I think there is a very great diversity indeed in the character or the class of lives ins. by different inst., arising from circumstances that have heretofore been dwelt upon, which may make the results of

> one inst. very widely different from those of another. I believe I may say particularly as to the case of the *Equitable* Ins. So., which has been much relied upon, and from which, I think rather unwisely, and even unlogically, a general rule has been deduced from a particular instance. I doubt whether the *Equitable* So.'s experience may be taken as an indication of that or of almost any other [answer 639].

He had previously said (633) that "the class of lives assured by the *Equitable* So. must have been of a very peculiar class." When asked the question: "Supposing the same degree of care and circumspection to be exercised by offices generally, the result would be pretty much the same, except in so far as the period of human life may be longer in the present day than it was 50 or 60 years ago, would it not?" he replied:

> Even that does not necessarily follow: one inst. may from its peculiar circumstances be called on to insure the lives of none but prudent men—men who were known to make provisions for their widows and children; another inst. may be largely mixed up with transacting ins. on the lives of persons who are in difficulties, and who have made ins. to provide against debts; now, though precisely the same amount of circumspection and intelligence might be used at the moment the proposal was made to those respective inst., and all those who at that moment might be bad might as certainly be rejected in the one case as the other, still the class of persons brought into the two masses might be so different as to show a result very widely different in the one case from the other. . . . It does not necessarily follow, therefore, that any facts may have been arrived at which shall enable you to determine what is a correct ins. scale of prems. on lives at different ages (640).

In 1845 Mr. F. G. Neison pub. the 1st ed. of *Contributions to Vital Statistics: being a Development of the Rate of Mort. and the Laws of Sickness; from orig. and extensive data procured from F. Sos.: showing the instability of F. Sos., "Odd Fellows," "Rechabites," etc.; with an Inquiry into the Influence of Locality on Health.* The T. in this work, and the experience on which they are based, will be spoken of under F. SOS.; LOCALITY; OCCUPATIONS; SICKNESS; etc. The work passed through two other editions; the 3rd, 1857, much enlarged.

In 1847 Herr Brune pub. in the *Allgemeine Versicherungszeitung* a Mort. T. for males deduced from the mort. experience of the GENERAL WIDOWS FUND in Berlin, of which we shall give an account under GERMAN MORT. T.

In 1850 Mr. Henry Ratcliffe pub. *Observations on the Rate of Mort. and Sickness existing amongst Friendly Sos.: particularized for various trades, occupations, and localities; with a series of T. showing the value of annu., sick gift, assu. for death, and contributions to be paid equivalent thereto; calculated from the experience of the members composing the Manchester Unity of the Independent Order of Odd Fellows.* These constitute a valuable series of T. known as *Odd Fellows Manchester Unity* T. (No. 1), which will be spoken of in detail under F. SOS.; LOCALITY; OCCUPATIONS; SICKNESS. (See 1862 and 1872.)

Mr. F. G. P. Neison, in his paper on the principal data available for assu. asso., read before the Inst. of Act. 1851, touched upon a subject which we regard as of importance, and which we think has been hitherto not sufficiently considered:

> *It should, however, not be lost sight of, that the rapid extension of the practice of life assu. of late years will render the data derived from the past experience of life offices yearly less applicable to their future operations.* Hitherto, life assu. has to a great extent been confined to the comparatively wealthy; but now the practice seems to extend to the less wealthy and humbler classes, and is in fact almost universally recognized by the industrious workmen of the country in connexion with F. Sos. As I have before stated here, it seems to me that there is little chance of a future generation of gigantic corp., boasting of their millions of invested cap., and revenues exceeding those of some of the States of Europe, springing up. It is more likely that an intermediate class of cos. will be called into existence, holding a position between that of the great corp. bodies estab. in the last and early in the present century, and the humble F. So., with which the working classes are familiar. If this supposition be well founded, or if it be admitted that life assu. will rapidly extend itself among all classes of the people, *it is evident that the rate of mort. among the assuring classes must gradually approximate to that of the country generally.*

In 1853 there was pub. by the authority of Parl.: *Return of the Friendly Sos. Sickness and Mort.*, which contained *The Friendly Sos. T.*, constructed by Mr. A. G. Finlaison from the returns of F. Sos. in E. and W., sent to the Registrar of these Sos., embracing the experience of 793,759 years of life. This T. will be more particularly referred to under FRIENDLY SOS.; and SICKNESS.

In 1854 Mr. Jellicoe, the then Act. of the *Eagle* Ins. Co., prepared a T. showing the mort. experience of that Co., of which we have given full details under EAGLE INS. CO., MORT. EXPERIENCE OF. (See 1874.)

In submitting to the Inst. of Act. the paper which contained the above T., Mr. Jellicoe said (*Assu Mag*. vol. iv. p. 200):

> In discussing the subject of assu. valuations and the most approved methods of making them, I have often had occasion to draw attention to the great importance of ascertaining with the utmost possible accuracy the rates of mort. and int. which have been found to prevail in any case under consideration, so as to determine what rates of prem. are really required to provide, independently of other exigencies, for the sums assured, and how far the particular rates charged are sufficient or more than sufficient for that purpose. I have insisted the more strenuously on the necessity of this proceeding, from the conviction that in almost every asso. *some peculiarity in the prevailing mort. will be found to exist, distinguishing it from that of its neighbour*, and arising from the different character of such influences as the condition of life of the persons whose lives are assured, the mode of selection, the greater or less predominance of the male sex, and of assu. made by persons on their own lives over such as are effected on the lives of others, the constitution of the co., and so on. Almost every asso. differing from the rest in one or more of these characteristics, will be found, as I fully believe, to present peculiar features in its experience; and hence, although we must necessarily be guided at first by such data as older sos. afford, it is, as I have said, of great importance to obtain that of the asso. whose affairs we may desire to investigate, so soon as its duration and the number of its members is sufficiently great to afford it, with anything like the requisite degree of precision.

He adds:

> Notwithstanding what has been said to the contrary, there can be no doubt that the enumeration of *pol.* in such investigations as if they were *persons*, is likely to lead to conclusions more or less erroneous.

Mr. Neison, in the 3rd ed. of *Contributions to Vital Statistics*, 1857, says:

> Life offices in this country have had their transactions almost exclusively with the middle and upper classes, and the same remark is to a great extent applicable to the experience of cos. on the Continent, and in America; therefore, whatever value may be attached to any of the Mort. T. hitherto referred to [the *Northampton*, *Carlisle*, and *Demonferrand's*], they cannot in the absence of other evidence be considered as strictly applicable to the purposes of assu. cos.

Again:

> Nothing is more notorious than the frequency with which the same life is assured in duplicate and triplicate, not only in the same office, but in several offices; and it often happens that on the same life there has at one time or another been issued as many as from 20 to 50 pol. in the different offices conjointly. . . .

In 1857 Mr. J. J. Downes, the then Act. of the *Economic* Life, prepared a T. of the mort. experience of that So., of which we have given full details [ECONOMIC LIFE, MORT. EXPERIENCE OF]. In his investigation he tested the influence of pol. against lives, and the results are shown.

In 1858 the directors of the *Mutual Benefit* Ins. Co. of Newark, New Jersey, U.S, pub. its mort. experience for the 12 years it had then been in existence. This, with the later experience of the So. [pub. 1874], will be given under MUTUAL BENEFIT LIFE INS. CO., MORT. EXPERIENCE OF.

In 1859 Mr. Sheppard Homans pub. a T. of Mort. based upon the experience of the *Mutual* Life, of N.Y. This, with some earlier and later obs., will be given under MUTUAL LIFE (OF N.Y.), MORT. EXPERIENCE OF. (See 1868.) In his rep. accompanying the T. he says:

> We cannot rely upon the results of any Federal or State census in this country (U.S.) for the purposes of life ins.; and besides it is very doubtful whether a T. of Mort. deduced from obs. made upon a miscellaneous community of men, women, and children, will ever represent with entire satisfaction the value of life amongst *assured lives*, who are in many respects a *peculiar class*. Hence for the purpose of modifying or correcting our own T. of Mort., *elements sufficiently reliable can only be obtained from the experience of our own or similar life ins. cos.*

In 1859 Mr. Samuel Brown, in his paper *On the Mort. amongst American Assured Lives*, read before the Inst. of Act. 1859 (*Assu. Mag.* vol. viii. p. 191), said:

> No good can ever come of the concealment of facts, which, if they tend to place the bus. of life assu. on a safer footing, must be a permanent advantage to the public, and which would prove the most effectual means of protecting the assu. themselves from the ignorance of unskilful, or the tricks of designing men. *I shall be glad to see in this country the noble example which a few leading cos. have set in pub. their experience more generally followed.*

In 1859 Herr Carl Hattendorff included in a translation [pub. at Hanover] of Mr. David Jones's treatise *On the value of annu. and rev. payments, etc.* (1843), the mort. experience of the *Russian Widows Provident Asso.* for the period 1776 to 1845. We shall hope to give this T. under RUSSIAN MORT. EXPERIENCE.

In 1860 Mr. G. A. Finlaison, Act. to the Commissioners of the National Debt, made a re-investigation of the data and results deduced therefrom by his late father (see 1829); and of this we shall give a full account under GOV. ANNU. MORT. T. Mr. Finlaison says in his Rep.: "The conclusion in fact to which one is compelled is, *that class observation alone is useful in the monetary and sanitary affairs of life.*"

In 1861 Mr. Wm. Spens, the then Man. of the *Scottish Amicable*, pub. *T. of the Mort. Experience* of that So. from 1826 to 1860. Full details of these T. will be given under SCOTTISH AMICABLE LIFE, MORT. EXPERIENCE OF.

In 1862 Mr. Henry Ratcliffe pub. *Obs. on the Rate of Mort. and Sickness existing amongst F. Sos*, wherein is contained: *The Odd Fellows Manchester Unity* Mort. T. (No. 2), constructed by Mr. Henry Ratcliffe from returns of the lodges composing the Unity for 1856-60, embracing the experience of 1006 years of life. See FRIENDLY SOS., MORT. T. FOR. (See 1850 and 1872.)

In 1862 Prof. Elizur Wright, then Ins. Commissioner for the State of Massachusetts, prepared a T. of the combined experience of all the ins. cos. transacting bus. in the State of Massachusetts during the 3 years ending 1 Nov. 1861. This T. will be given under MASSACHUSETTS, STATE OF, MORT. T. FOR. (See 1865.)

In 1863 there was pub., as the joint production of Mr. Samuel Brown, Mr. Peter Hardy, and Col. J. T. Smith, (the Act. of the Fund): *Report on the Madras Military Fund, containing new T. of Mort., Marriage, etc., deduced from the* 50 *years experience* 1808 *to* 1858, *etc.* A full detail of the contents of this Rep. will be given under INDIA.

In 1863 Herr Hopf, the Man. of the *Gotha* Life, pub. the mort. experience of that So. during the 34 years 1829-62. Of this we shall give a full account under GOTHA LIFE INS. CO., MORT EXPERIENCE OF.

In 1865 the mort. experience of the *Metropolitan* Life Assu. So. during a period of 30 years, *i.e.* from the foundation of the So. in 1835 to 31 Dec. 1864, was prepared and pub. by Mr. Arthur Pearson, the Assistant Act. of the So. Full details of this experience will be given under METROPOLITAN LIFE ASSU. SO., MORT. EXPERIENCE OF.

In 1865 Dr. Theodor Wittstein, Act. of the *Hanover* Life Ins. Co., pub. the mort.

experience of that office for a period of 34 years, 1831-2 to 1864-5. This T. will be given under GERMAN MORT. T.

In 1865 also Prof. Elizur Wright prepared a further Mort. T. based upon the experience of the ins. asso. carrying on bus. in the State of Massachusetts. This will be given under MASSACHUSETTS, STATE OF, MORT. T. FOR. (See 1862.)

In 1866 there was pub. in Zurich a T. of Mort. based in part upon the experience of the *Zurich* Life Ins. Co. up to 1866; and in part upon the national returns. We hope under SWISS MORT. T. to be able to furnish some interesting details.

In 1868 Mr. Sheppard Homans made a further investigation into the mort. experience of the *Mutual* Life of N.Y., and prepared the Mort. T. generally known as the AMERICAN EXPERIENCE T.; but sometimes called HOMANS' T. NO. 2. (See 1859.)

Mr. W. H. Manly, in his "Messenger Prize" Essay, 1868, shows the necessity for ins. offices testing their actual mort. experience, and not relying too exclusively on their expected or assumed rate of mort., in the following manner:

> Suppose that an office valuing by the *Equitable* T. were to experience a mort. corresponding to that exhibited by the *Combined Experience* T.; such an office, although it would take credit for having made its calculations at a rate so low as 3 p.c., would have a sum in reserve so small as to require accumulating at a rate of int. over 4 p.c., in order to meet all its claims and maintain a solvent condition. But if the office were to use 4 p.c. in its valuations, instead of 3 p.c., it would have to make nearly 5½ p.c. on its investments before it could be said to be perfectly solvent.

In 1869 was pub.: 1. *The Results of the Inquiry undertaken by the Inst. of Act. into the Mort. Experience of* 20 *Contributing British Offices.* Concerning this we have already given full details under EXPERIENCE T. NO. 2. 2. *Rep. of Scottish Joint Committee appointed to collect the Experience of the Scottish Life Assu. Offices.* This will be spoken of fully under SCOTTISH MORT. EXPERIENCE (1869).

At a meeting of the managers of the German Life Ins. Asso. held at Berlin in 1870, it was resolved to commence immediately the preparation of a new Mort. T. based upon the experience of the German cos. We have not yet learned what progress has been made.

Prof. McCay, in an art. in the *Spectator* of N.Y., July, 1870, said:

> What an ins. co. really wants is the experience of mort. among select lives; not among the general pop. comprising people of every degree of health and disease, but among persons who are sound and well when they enter the cos. Dr. Farr's [*English*] T. or the *Swedish*, or the *Carlisle*, is not suited to their wants; nor is the *American*, because its experience is too limited as to age, its obs. too few, its pol. too recent, its ins. too brief, and its new members too large a portion of the whole number.

In 1872 Mr. Henry Ratcliffe pub. *Supplementary Rep.*, containing *Odd Fellows, Manchester Unity T.* (No. 3), also by Mr. Ratcliffe, from the returns of the lodges composing the Unity for 1866–70, embracing the experience of 1,321,048 years of life, "being the largest experience hitherto collected by F. Sos. in the U.K." See F. SOS., MORT. T. FOR. (See 1850 and 1862.)

Mr. James Valentine, in his paper, *A Comparison of Reserves brought out by the use of different data in the Valuation of the Liabilities of a Life Office* [*Assu. Mag.* vol. xviii. p. 229, 1874], says:

> Firstly, as regards mort. Surely, if we can find a T. of the mort. actually experienced among a body of assured lives, numerous enough and drawn from the records of a sufficient number of offices, to give them a representative character—and still more, if it appear that such T. is confirmed by another and independent T. answering the same conditions—it will need no argument to show that we have there a true exponent for this part of our standard. Other T. framed from statistics of the whole pop., or of particular districts of the country, or even from the experience of individual offices, although they may be framed with skill, and be very useful in some ways, cannot, it seems to me, have the slightest pretensions, for general life office purposes, to an equal degree of value, to say nothing of superiority.

In 1874 Mr. Geo. Humphreys, M.A., prepared a T. showing the mort. of "Lives classed as unsound" which had been ins. with the *Eagle* Ins. Co. during a period of 63 years ending 30 June, 1874. This T. is given under EAGLE INS. CO., MORT. EXP. OF.

In 1874 Mr. Josiah Martin, the Act. of the *British Empire* Mut., prepared T. of the mort. experience of that So. from its commencement in 1847 down to 1872, a period of 26 years. The results, which possess considerable interest, will be given under MORT. T., HIST. OF.

In 1874 the mort. experience of the *Mut. Benefit* Life of Newark, N.J., during the period 1845–73, was pub. and some valuable T. given. The results will be reviewed under MUT. BENEFIT LIFE, MORT. EXPERIENCE OF. (See 1858.)

The mort. experience of the leading life offices of the U.S. is now in process of being collected and compiled, under the superintendence of a Committee of the Chamber of Life Ins., of which Col. Greene, of the *Connecticut* Mut., is the Chairman. Mr. L. W. Meech is the Act. in charge of the data.

For further details on this subject, see MORT. OBS.; MORT. TABLES.

EXPERTS.—(1) Sworn appraisers; (2) witnesses who give evidence on matters of science; (3) professed judges of handwriting. The nature, extent, and limits of the evidence of experts in ins. cases of various classes have already been stated in our art. EVIDENCE.

EXPIRATION.—In Physiology, the movements by which the air that has been changed by the respiratory process is expelled from the lungs; they are chiefly due to the elastic contraction of the lungs, and the walls of the chest, after they have been dilated in the act of inspiration.

EXPIRATION OF POLICIES.—See TERMINATION OF RISK. [CANCELMENT.] [DAYS OF GRACE.] [FORFEITURE.]

EXPLORATION.—In Medicine, the examination of the abdomen, chest, etc., with a view to ascertain the *physical signs of disease*, in contradistinction to those signs which are termed *symptoms*.

EXPLOSION.—An Explosion may be described generally as a sudden and rapid combustion, causing violent expansion of the air, and accompanied by a report. But the rapidity of the combustion, the violence of the expansion, and the vehemence of the report, vary in intensity as often as the occurrences multiply. Hence, an explosion is an idea of degrees; and the true meaning of the word, in each particular case, must be settled, not by any fixed standard or accurate measurement, but by the common experience and notions of men in matters of that sort. *Vide* judgment in the *United* Life, Fire, etc., Co. v. *Foote*, referred to in our next art.

EXPLOSIONS AS AFFECTING INS. OFFICES.—The question of Explosions and their consequences come before underwriters in the various branches of Ins. with increasing urgency and rapidity. We propose to review the subject here under an alphabetical arrangement, which we think will be found convenient for practical reference.

Before doing this, it will be instructive to peruse the judgment of Mr. Justice Cushing, one of the Judges of the Supreme Court of Massachusetts, in the case of *Scripture* v. *Lowell Mut.* F. Ins. Co. (1852), hereinafter mentioned; and perhaps one or two others.

> It seems not to be denied that actual combustion produced by the ignition of gunpowder *is within the present pol.* If, then, a combustible substance, in the process of combustion, produces explosion also, it is not easy to perceive why, of the two diverse but concurrent results of the combustion, the one should be ascribed to fire any less than the other. The plain fact here is, the application of fire to a substance susceptible of ignition, the consequent ignition of that substance, and immediate damage to the premises thereby. It is no sufficient answer to say that some of the phenomena produced are in the form of explosion. All the effects, whatever they may be in form, are the natural results of the combustion of a combustible substance; and as the combustion is the action of fire, this must be held to be the proximate and legal cause of all damage done to the premises of the plaintiff.
>
> Our opinion excludes, of course, *all damage by mere explosions, not involving ignition and combustion of the agent of explosion:* such as the case of steam, or any other substance *acting by expansion without combustion.* It likewise excludes all damage occasioned but remotely or consequentially through the agency of gunpowder, such as injury done to a house by falling fragments in the blasting of rocks; or the shattering of a house by the stroke of a cannon ball; in which examples the shock of the projectile, and not ignition or combustion, is the proximate cause of the damage done. We recognize and accept, in the force of its application, the maxim: *In jure non remota causa sed proxima spectatur* [In law the immediate, not the remote, cause of any event is regarded.—*Bacon*, Max. 1]. . . . .
>
> In the present case there is no room for question concerning a series of causes, as whether primary or secondary, proximate or remote: for the agent is one and the same throughout, namely fire. The *causa* was burning powder, the *causa causans* was a burning match; at each stage of causation it was the action of fire. Nay, to be exact, the burning of the gunpowder, like the burning of the match, was a succession of several complex acts of burning. Yet fire is the agent at each of these distinct stages of causation. Suppose there was a barrel of sulphur in the plaintiff's attic, instead of gunpowder, and this being ignited with a match, afterwards the fire had passed from the burning sulphur to the substance of the house. This would be recognized at once as a case of fire. It does not change the legal relation of causes to substitute a barrel of burning gunpowder for a barrel of burning sulphur. The only difference in the elements of the question is, that the gunpowder, when ignited, consumes with more rapidity than sulphur, and the combustion is accompanied or followed by explosion. Still the agent is fire, though it acts in different ways upon the different successive subjects of its action, beginning with the match and terminating with the plaintiff's house.
>
> On the other hand, cases are conceivable, other than by the use of gunpowder, of explosion without any combustion, which nevertheless, being the action of fire, are still, it would seem, within the range of the general principle. Various mineral substances exist, of value in commerce, and the arts, which explode by the action of fire, without either ignition or combustion. In general, any close vessel, of whatever material composed, when filled with an explosive fluid, is liable to explode by the action of the heat, though it may be that the vessel and its contents are alike incombustible. The same thing happens, under certain conditions, to some forms of wood; which, although combustible, may, by the action of fire, explode without ignition; or which, as in the present case, of a house, by having compressed within it, some burning substance, which is explosive as well as combustible, like gunpowder, may suffer the double injury of combustion in part, and in part of explosion. . . .
>
> In the hypothesis that fire is to be regarded as *causa proxima* in the present case, we can see but one supposable defect, namely, the suggestion that, though it be conceded that the explosion of burning gunpowder, and its effects, are the action of fire; yet this particular effect on the building is not exhibited in the form of igneous action. The cases above supposed, of the shrivelling of some masterpiece of pictorial art, the cracking or discolouration of a rich vase or gem, the bursting of a cask of wine through the expansion of its contents—these, it may be said, are distinctly cases of damage, without ignition it is true, but by the direct and specific action of heat as such; while it is denied that such is the fact in the present case of the blowing up of a dwelling-house by the ignition of gunpowder. We do not think the premises of this argument are sustained by the physical facts which occurred. If they were so, then the nearest analogy would be of damage by smoke, that is, the moisture thrown off by burning wood, and carrying with it ashes, empyreumatic oil, and other constituent parts of the wood, either in their natural condition, or transformed by the process of combustion. Now it is obvious that mere smoke, without any direct action of heat, may do great damage to many kinds of merchandize, such as delicate textile fabrics, esculent vegetables, articles of taste, and other numerous objects; and if a dwelling-house or a magazine take fire, and some parts of it only be consumed, but the contents of apartments to which the actual fire does not extend are nevertheless damaged by the smoke penetrating into and filling them, can it be doubted that the damage thus done is a loss within the ordinary conditions of a fire pol.? Yet, incontestably, damage by smoke is an effect, which is not in itself igneous action, though it be the result thereof; while, as we conceive, the explosion of gunpowder is igneous action.

By way of answer to the preceding, we may quote a passage from the judgment of Mr. Justice McIlvaine, in the case of the *Union* Life, Fire, etc., Co. v. *Foote*, heard in the Superior Court of Ohio, 1872:

> It may be true, in a strictly scientific sense, that all explosions caused by combustion are preceded by a fire. The scientist may demonstrate in a case where gunpowder is destroyed by fire, or in any case where the explosion is caused by or accompanies combustion, that ignition and combustion precede explosion; but the common mind has no conception of such combustion as a fact independent of the explosion, where they occur in such rapid succession that no appreciable space of time intervenes. . . .
>
> It is true the explosion was caused by a burning gas-jet, but that was not such fire, as contemplated by the parties, as the peril insured against. The gas-jet, though burning, was not a destructive force, against the immediate effects of which the pol. was intended as a protection. Although it was a possible means of putting such destructive force in motion, it was no more the peril insured against than a friction match in the pocket of an incendiary. . . .

Mr. Bunyon, in his *Law of Fire Ins.*, 1867, speaking of the practice in the U.K. at that date, says:

> In the case of explosion, where there has been a fire upon the premises, and gunpowder or some other explosive substance has ignited and increased the damage, there can be no question but that the office is liable to make good the damage; and the same result must ensue if the explosion has taken place in an adjoining building, and the limits of the injury by the fire and by the explosion cannot be distinguished. But the case was more difficult when the fire was not the proximate cause of the damage, which arose from the shock or concussion of the air alone, and there was no special provision applicable in the pol. Until very lately there had been no decision upon the subject [in the U.K.]; but two recent cases have settled the point, by wholly negativing the liability. These cases are well known to the ins. offices as the Lottie Sleigh case, and the Erith explosion case. Until the latter, the usual practice of the insurers seems to have been to profess to repudiate the legal responsibility, but to hand over to the assured, *ex gratia*, as they termed it, a compensation equivalent to the injury done. In this case [Erith explosion], however, they appear to determine to repudiate their liability. They were prob. appalled by the exaggerated statements which were made as to the amount of the devastation which had followed the explosion; still more so by the fear of what might possibly occur if a similar accident were to happen in the Gov. magazines near the Metropolis. To meet such a calamity they felt that their accumulated funds might even prove insufficient; and that the risk was not one intentionally included in the prems.

Mr. May, in his excellent work on *The Law of Ins.*, etc. [Boston, 1873], says: "The subject of loss by explosion has given rise to much elaborate and learned discussion; and recently to decided differences of opinion, presented on both sides with marked ability."

The preceding remarks and opinions may be usefully applied to what follows.

Chemical Stores.—In many of the wharves and bonded warehouses in London, and other ports of the U.K., as also in many of the inland warehouses, there are brought together chemical products of such magnitude as regards quantity, and so dangerous as regards quality, but that for the knowledge of the danger by those more immediately concerned, and the precautions taken, must frequently lead to most disastrous results to life and property.

On 6 Oct. 1854, occurred the fire at Gateshead, which, with the fearful explosion that accompanied it, caused damage estimated at £600,000. The fire originated in a worsted manufactory, adjoining to which was a bonded warehouse. This latter was considered to be a double fire-proof structure, being supported on metal pillars and floors, and lined throughout with iron-sheeting. In this building was a large variety of chemical stores, and among them in one vault 47 tons of sulphur, covered with a tarpaulin to protect it; but on this tarpaulin was placed 45 tons of nitrate of soda. There was no gunpowder, charcoal, saltpetre, or naphtha stored there. The fire of the worstead warehouse caused the brickwork of the bonded warehouse to crumble away, and ultimately nothing remained on one side but the red-hot skeleton of the building. Some workmen who had been engaged with nitrate of soda predicted that it would explode; but this view was not generally entertained. Finally one of the most terrible explosions occurred of which we have any record in this country.

An inquiry into the cause of the explosion was instituted, and in view of its results it should be stated that the chemical stores in the warehouse, beyond those named, consisted of guano, alkali, fuller's-earth, ammoniacal charcoal, peat-ash, yellow ochre, bone-ash, arsenic, zinc, iron, lead, magnesia, alum, coal-tar. Mr. Hugh Lee Pattison, chemical manufacturer, being called as a witness, said he was of opinion that none of the substances named were explosive *per se;* that no two would be explosive by being rudely mixed together; perhaps hardly any three of them would become explosive by being so mixed. He had made experiments for this occasion, and had melted nitrate of soda, and, when perfectly fluid and red-hot, had poured into it melted brimstone. There was produced certainly intense heat, but no explosion. There merely took place what chemists called "deflagration," or combustion with sparks without explosion. *Another element was therefore wanted, and that element was water.* There was, he said, abundant evidence that when water comes in contact with intensely heated and melted saline matter, instant explosion takes place. It would be essential, for the amount of water to produce its full effects, that it should fall upon the heated saline mass almost at once. *A pint of water would cause a loud explosion.* He thought it was very unsafe to have such a quantity of combustible matter so placed as had been the case here.

By means of this explosion the shipping in the river became ignited; as did the warehouses on the other side of the river; thus extending the damage into Newcastle; while many houses not burned were much damaged.

The losses which fell upon the British offices in consequence of this fire and the resulting explosion were about £140,000; the *Newcastle* Fire Office being the principal loser; while the *North British*, *Leeds and Yorkshire*, and others were severely hit. It was agreed by a committee of offices that the losses be paid, notwithstanding the element of explosion: the fire being the primary cause.

Chemical Works.—The application of chemistry to the process of manufactures has largely increased the risk of fire, and has added the risk of explosion. The following cases have arisen in this connexion:

In *Stanley* v. *Western* Ins. Co. (of Lond.), 1868, the Co. had insured the plaintiff's business premises. A clause in the pol. contained *(inter alia)* the following: "No allowance will be made for . . . any goods which may be destroyed or damaged while undergoing any process in or by which the application of fire heat is necessary; neither will this Co. be responsible for loss or damage by explosion, except for such loss or damage as shall arise from explosion of gas."

The plaintiff's bus. was that of extracting oil from shoddy, which was effected in the following manner: The shoddy is placed in an "extractor," into which is pumped from below bi-sulphide of carbon: this rising through the shoddy disengages the oil, which flows off through a hole in the top of the extractor. The bi-sulphide is next drawn off, and steam introduced, which carries off the residue of bi-sulphide and oil remaining in the extractor, into a still, where they are separated. The vapour which thus passes from the extractor would, in chemical terminology, be called a vapour and not a gas: being condensible at a temperature above 32° (viz. 109°) Fahr. But the distinction between gas and vapour is merely a conventional one, though known and recognized by chemists. The vapour in question is highly inflammable, and when mixed with air in the proportion of 1 to 15, is explosive.

The accident arose from a leakage in the gaskin (or packing of canvas) which lies between the lid and rim of the extractor, coupled with a stoppage in the pipe between the extractor and the still. The vapour escaping through the hole, took fire at the lamps, and ignited some matting and bags lying near; and becoming sufficiently mixed with the air, exploded. The explosion blew off the roof, and blew down part of the walls; after which the fire became general, and burnt for some time.

The plaintiff claimed to recover for the whole loss, on the ground that the vapour in question was gas within the meaning of the pol.; or that, if not, the exception of explosion applied only to cases where the fire was originated by the explosion, not where the explosion occurred in the course of the fire, and therefore did not include the present case.

The question, on a special case for the opinion of the Court was, whether the plaintiff was, under the circumstances, entitled to recover for the damage done by the explosion, or for the damage done by fire subsequent to the explosion.

The Court *held*—1. That the word *gas* in the pol. meant ordinary illuminating coal-gas. 2. That the exemption of liability for loss by explosion was not limited to cases where the fire was originated by the explosion, but included cases where the explosion occurred in the course of the fire; and that it exempted the defendants in respect both of the damage from the explosion itself, and of the damage done by the further fire caused by the explosion.

In *Briggs* v. *North British and Mercantile*, before the Court of Appeals of N.Y. 1873, the facts were as follow: The Co. insured the plaintiff's property, an oil refinery, including machinery, etc., against loss by fire. The pol. contained a proviso that the Co. "would not be liable for loss caused . . . by explosions of any kind, and then for fire only." An explosion was caused by a lighted lamp being placed near the machinery, in contact with the inflammable gas. The building was almost wholly destroyed by the explosion, and soon after a fire broke out, which was slight compared with the damage caused by the explosion. The jury found the amount of loss caused by each separately. *Held*—1. That loss by an explosion caused by fire was not covered by the pol. 2. That where an explosion is the incident, and fire the principal cause of the damage, different views might obtain. [2 *Law Ins. Journ.* 929.] See sub-heading "Gun-cotton;" and art. Explosive Substances.

Collieries.—See art. Collieries, Explosions in; also art. Collieries, Ins. of.

Destruction of Buildings to stop Fire.—The use of explosive substances for this purpose has given rise to some very nice questions regarding the parties upon whom the loss is to fall, viz. upon the City, or upon the ins. offices; and there are also points of indirect or remote damage. These will be discussed under Fire Extinguishment.

Distilleries.—The process of distilling is divided into two parts—1. Extracting the crude spirit from the substance operated upon. 2. Refining the spirit so obtained. This latter process has given rise to the following case:

In *United Life, Fire, and Marine* Ins. Co. v. *Foote*, before the Supreme Court of Ohio, 1872, the facts were as follow: The Co. by its pol. insured against loss or damage by fire a stock of merchandize described as consisting principally of liquors, fixtures, tools, and office furniture, contained in a building occupied as a liquor store, "with privilege of rectifying and manufacturing fine spirits by steam not generated in the building." The pol. contained a provision embodying the following: "This pol. is not liable for loss or damage . . . occasioned by, or resulting from, any explosion whatever, whether of steam, gunpowder, camphene, coal oil, gas, nitro-glycerine, or any explosive article or substance, unless expressly insured against, and special prems. paid therefor."

At the time of taking out the pol. and until the fire, the insured were engaged in rectifying whisky, in the building mentioned in the pol. In the process of rectifying, the raw spirit was conveyed by pipes to the stills, where it was converted into vapour by steam pipes passing through them, and from thence the vapour was conducted to a condenser.

On the occasion of the fire, a valve in one of the stills was left open, and the vapour escaping into the building, mingled with the atmosphere, forming an explosive mixture, which came in contact with the burning gas-jets, and a sudden and violent combustion occurred, accompanied by a report and a gush of flame, which was driven through the door of the still-room. Immediately after this the building was discovered to be on fire throughout its several stories.

It was *held*, upon the evidence adduced: 1. That explosions vary considerably in their intensity. In this case, although the building was not rent asunder, or the property therein broken to pieces, there was a sudden flash of flame, a rush of air, and a report like the "crack of a gun," which certainly brought the occurrence within the meaning of the word as used in many instances. [See our definition.]

2. That the fire by which the building and stock of merchandize ins. were consumed was occasioned [see sub-heading "Chemical Works"] by and resulted from an explosion of spirit vapour mixed with atmosphere; and that the explosion was caused by the mixture coming in contact with the burning gas-jet; and that the explosion was not caused by a fire within the meaning of the pol.

3. That the terms of the pol. must be taken in their ordinary sense; and the Court was satisfied, according to the ordinary sense and understanding of men in reference to such matters, that the explosion occasioned the fire, which destroyed the property ins.; or in other words that the loss resulted from an explosion within the true intent and meaning of this pol. [See FALL OF BUILDING.]

Fire-damp.—See art. COLLIERIES, EXPLOSIONS IN. [FIRE-DAMP.]

Flour-mills.—The application of steam power to flour-mills has increased the risk of their destruction, apart altogether from the risk of the boiler itself, which would not be covered by the fire pol.; but by the increased velocity given to the machinery, and also apparently by the more complete manner in which the "flouring" process is performed.

In the *Merchants and Manufacturers* Ins. Co. v. *Washington* Ins. Co. 1854, it was *held*, that the acceptance of a risk upon a steam flouring mill involved the assumption of those risks fairly and properly connected with such a bus., as part of and appertaining to it, whether newly introduced, or used before the ins. was effected or not. [1 Hand, Ohio, 181.]

On the 9th July, 1872, an explosion, followed by a fire, occurred at the Tradeston Flour-mills and Granaries, Glasgow. The circumstances were remarkable, and at the moment inexplicable. A committee of the fire offices interested instructed Mr. W. J. Macquorn Rankine, C.E., LL.D., and Mr. Stevenson Macadam, Ph.D., F.R.S.E., to investigate and report. The Rep. of these gentlemen, dated 9th Aug. 1872, contains some points of great general interest:

> . . . We have made a searching investigation into all the circumstances connected with this disastrous affair, and having inspected the premises, examined all surviving witnesses, visited various other mills, and inquired, by the examination of witnesses and documents, into the list of other fires and explosions of a like nature, we have to rep. as follows:
>
> 1. That the primary cause of the fire and explosion was the accidental stoppage of the feed of one pair of stones engaged in the grinding of sharps, which led to the stones becoming highly heated and striking fire. 2. That the fire thus generated inflamed the finely divided dust which was diffused through the air in the exhaust-conduits, and then passed on to the exhaust-box. 3. That the sudden combustion of the dust diffused through the air would produce a very high temperature in the gaseous products of that combustion, and this would necessarily be accompanied by a great and sudden increase of pressure and bulk—constituting in fact an explosion. 4. That the first effect of this explosion would be to burst the exhaust-box, and allow of the diffusion of the dust and flame through the atmosphere of the whole mill. 5. That this communication of inflammable dust and flame throughout the atmosphere of the whole mill was the cause of the second explosion, by which the gable walls were blown out, the mill reduced to ruins, and the wood-work set on fire. 6. That the stores or granaries were set fire to partly by the flame and fire from the mill travelling along the gangways, and partly from the burning materials falling through the sky-lights. 7. That no explosive or other foreign material was used in the manufacture of the flour, and that we found the steam-boilers uninjured. 8. That we have not been able to trace blame on the part of the proprietors of the mill or of any one in their employment, as every precaution known at the time was used.

Passing from the particular to the general, they say:

> We have ascertained, both from the evidence of eye-witnesses, and from printed and pub. documents, that fire-explosions, similar in their cause and nature to that at Tradeston Mills, *are accidents of ordinary occurrence in flour-mills*, especially since the introduction of the apparatus called the "exhaust." This fact, however, is little known to the general public, or indeed to any one except those practically employed in working such mills, though it appears to be better known on the Continent than in Gt. Brit., being mentioned in French and German treatises on flour-mills, but not to our knowledge in the standard English books on that subject. . . . *It requires some consideration to see the reason why such fire-explosions are not much more frequent than they have been.*

Next we reach the scientific solution:

> A fire-explosion consists in the sudden combustion of a mixture, whether solid, liquid, or gaseous,

or partly in each of these conditions, containing a combustible substance, and a supporter of combustion, such as oxygen, finely divided and intimately diffused throughout each other, and either exactly or nearly in certain definite chemical proportions; and to inflame that mixture, there must also be present a body at a white heat, such as a flame or spark. The failure of any one of these conditions prevents the explosion: for example, if there be an excess or a deficiency of any of the ingredients of the explosive mixture, or if they be not thoroughly mingled, the contact of fire with either will fail to inflame the mixture, or will produce only gradual combustion, and not explosion; or if the spark or other hot body be below the white heat, the inflaming or combustion will fail. It thus appears that it is only through the coincidence of certain conditions that a fire-explosion is possible; and this accounts for these being of only occasional, and not daily occurrence in flour-mills.

In such mills the explosive mixture consists of atmospheric air through which is diffused a very fine impalpable dust, produced during the grinding and previous cleansing of the grain, the sifting of the flour, and other processes. The dust is gathered, and, in mixture with air, is collected in confined spaces merely through the action of the exhaust. We have ascertained by direct experiment the inflammability and explosiveness of this mixture. We have also calculated that when the theoretical proportions best united to produce an explosion are exactly realized, the pressure of the resulting gaseous products, if confined in a limited space, suddenly becomes equal to about 8 times that of the atmosphere—being sufficient to produce effects of great violence in the way of bursting exhaust-boxes, throwing down partitions and walls, and the like. It is prob. that through deviations from the precise theoretical conditions, the before-mentioned great pressure is not actually allowed, but still it is certain that a very intense and destructive pressure must be produced.

Next, the circumstances being favourable as herein set forth, we have to see what else becomes necessary in order to an explosion of this character:

As for the source of heat which inflames the explosive mixture of dust and air, that may be furnished by the flame of a lamp incautiously brought in contact with the dusty cloud, but more frequently through the mill-stones striking fire when happening to run empty. A pair of mill-stones, when the feed is accidentally suspended, readily fire with each other: for they are made of a flinty, or other very hard siliceous rock, and the sparks from them are capable of inflaming any combustible substance. The occasional suspension of the feed is an accident which cannot be wholly prevented by any amount of caution. A still more dangerous kind of spark is formed when a piece of metal, such as an iron nail, accidentally gets between the mill-stones, for the sparks then produced are globules of molten metal at a white heat, and in a state of combustion. *We have ascertained that the presence of a nail between the mill-stones can set fire to the dusty atmosphere, even when feed is on.* In fact, to guard against this last danger, from the dropping of nails into the hopper, magnets have been placed in the feeding spouts. It is not to be expected, however, that the mere placing of magnets in the position indicated will wholly prevent the passage of the nails, but will only reduce the danger from this cause to a minimum.

This liability to explosion in flour-mills appears to be of modern introduction—mainly attributable to improvements in the process of "flouring":

It is manifest that the great danger in the operations carried on in a flour-mill does not lie in the grinding process proper, but in the plan pursued in the storing up of the finest and most impalpable of the flour-dust. So long as the grinding operations are carried on in the simple manner pursued in small mills, where the stones are merely covered in with wooden boarding, and there is no exhaust, if the feed goes off and the stones strike fire, or a nail or other foreign substance gets between the stones, and luminous sparks are given off, there can only be a limited amount of flour dust to inflame, and the combustion and explosion must be at a minimum; be confined to a small space; and be not capable of exerting disastrous effects. The fire explosion will be localized in the pair of stones where it originates, or at most not extend beyond the meal spout attached thereto.

But it is otherwise where the exhaust is employed, and all the fine dust is drawn up by a fan into an exhaust-box—either with or without a supplemental stive-room—where the powder accumulates, and where a flame sucked up from the stones must inevitably lead to an explosion of a more or less serious nature. The danger necessarily increases when 10, 20, or 30 pair of stones are connected with the same exhaust-box and stive-room, and the maximum danger is arrived at when the exhaust-box, with its supplemental stive-room, is placed within the mill, and even occupies part of one of the floors. A similar remark applies to the methods employed in cleansing the wheat.

In fact, all these processes of cleansing the grain and separating and sifting the flour, which the great improvements in milling have introduced of late years for the ostensible and laudable purpose of raising the quality of the flour, have more or less tended to bring about a condition of matters which renders the majority at least of the larger flour-mills liable to accidental fire-explosions of a more or less disastrous nature.

Finally, the remedy:

We have therefore to recommend for future guidance and safety, that all receptacles in flour-mills, in which a dusty atmosphere collects, should be placed outside the mill, in buildings so constructed as to be readily blown to pieces, in order that any explosion which may take place in them may easily find vent, and not be forced to travel back into the mill. Amongst such receptacles we include exhaust-boxes, stive-rooms, smut-room, and exhaust-fans. If this arrangement be carried out, any flame which may originate in the stones and even travel along the exhaust-roans or conduits, will be sucked out of the mill by the exhaust-fan into the exhaust-box, and should the conditions of a fire-explosion be at the time in the said box, the force will spend itself in blowing off the roof, or bursting the sides of the exhaust-box, and prob. also of the connecting room, called the stive-room. It will be necessary to arrange that the roan or conduit leading from the mill to the fans outside be of small size, so that the inflamed gas may only find vent to a very limited extent into the mill itself, and prob. this may be altogether hindered by the construction of a swing door, placed in the exhaust-room before the fan. The construction of the exhaust-roans or conduits of metal would also diminish the prob. of the fire spreading through such, by conducting away the heat, and thus reducing the temperature of the flame. The latter arrangement may be objected to, however, on the ground of its leading to the condensation of moisture, and the formation of paste with the flour-dust.

There should be no other direct communication between the mill and the exhaust-box and stive-room, than the exhaust-roan or conduit; and it will be safer if the exhaust-box and stive-room are constructed outside of one end of the mill building, where there are no windows. The same remarks apply to the smut-rooms. None of these dust receptacles should be entered or cleaned out during the working of the mill.

We also deem it advisable to recommend, as subsidiary precautions:—1. That the use of naked lights, or even of ordinary lamps, be prohibited in or near any place where there is a dusty atmosphere, and safety lamps only be permitted in such places. The gas-jets should also be inclosed in glass and wire-gauze safety cages. It would be a wise proceeding to insist that no naked flame of any kind be permitted within the mill, as an accidental explosion may occur at any time which will lead to the production of a dusty atmosphere in any of the floors. 2. That the use of magnets to collect nails or other pieces of iron which might fall into the hoppers, be made universal. This precaution was taken in the Tradeston Flour-mills, but we have not seen it adopted in any mill we have visited. The evidence we have taken shows the extreme difficulty of insuring the total separation of nails and other materials from the grain, even by the employment of the most elaborate cleansing apparatus and the greatest care. The intervention of a number of magnets, however, in the hopper feed-spouts will practically insure that this source of danger in the production of luminous sparks be reduced to a minimum for the future.

At a meeting of the Royal Scottish So. of Arts, held in Dec. of the same year (1872), Dr. Stevenson Macadam read a paper on *Flour-mill Fire-Explosions*, wherein he generalized upon the facts contained in the preceding Report, but we do not notice any new point.

Gas.—Explosions occasioned by ordinary illuminating gas, *i.e.* coal-gas, are covered by fire pol. generally in the U.K.; but the gas must not be manufactured on the premises, unless special permission be contained in the pol. And if the explosion shall arise from the negligence of the gas co. or its servants, while the ins. co. will be primarily liable to the pol.-holder, it can in its turn recover against the gas co. [GAS.]

Glass Ins.—The so-called plate-glass ins. cos.—their bus. is not confined to insuring plate-glass, but includes sheet-glass, British plate, etc.—now carefully exclude the consequences of explosion in all forms from their pol. Formerly they did not do so. See sub-heading "Gunpowder:" cases of the "Lottie Sleigh;" the "Erith;" and the "Regents Canal" Explosions.

Gun-cotton.—This highly explosive substance, invented 1846, but only brought into general use at a much more recent period, has already lent its aid to increase the casualties from explosion. On the 11th Aug. 1871, the works of Messrs. Prentice, at Stowmarket, Suffolk, were destroyed, causing great destruction of property in the town, which indeed presented the appearance of having suffered bombardment. Some 24 persons were killed, and about 60 others wounded; many of them seriously. Scientific inquiries which followed showed the cause of explosion to have been "the addition of sulphuric acid to the gun-cotton subsequent to its passing the tests required by Gov." This was believed to have been done wilfully. There was no fire here, and therefore no claim on the fire offices. The life and accident cos. were the sufferers, other than the owners and occupiers of property in the neighbourhood.

Gunpowder.—The storage and transport of gunpowder is, and for some time has been made the subject of legal enactment. These regulations will be reviewed more conveniently under our art. EXPLOSIVE SUBSTANCES. The effect of gunpowder explosions, so far as they have involved direct questions of Ins., will be considered here.

In the case of *Grim* v. *The Phœnix* Ins. Co., before the Supreme Court of N.Y. 1816, the facts were these: A vessel was insured, among other risks, against *fire*. During the voyage a seaman carelessly put up a lighted candle in the binnacle, which took fire, and communicating to some gunpowder, the vessel was blown up, and wholly lost. It was *held*, that the insurers were not liable for the loss. Insurers, it was laid down, are not responsible for the fault, negligence, or misconduct of the master or mariners, not amounting to *barratry*. A loss occasioned by the mere negligence or carelessness of the master, or mariners, does not amount to *barratry*, which is an act done with a fraudulent intent, or *ex maleficio*.

In the case of *Scripture* v. *Lowell Mut.* Fire Ins. Co., before the Supreme Court of Massachusetts, 1852, the facts were as follow: A minor, son of the tenant, carried a cask of gunpowder into the attic of the dwelling insured, and fired it with a match. The explosion set fire to a bed and clothing, charred and stained some of the wood-work, and blew off the roof of the house. The question before the Court was whether the loss thus occasioned to the building was covered by the conditions of an ordinary fire pol. *Held*, that an ins. against "loss or damage by fire" covers a loss arising in part from explosion, and in part from combustion of gunpowder on the premises. [The judgment of the Court in this case we have already quoted at commencement of this art.]

In *Caballero* v. *Home* Mut. Ins. Co., 1860, the fire did not occur on the premises insured, but broke out in a contiguous building, and caused an explosion of gunpowder, which, by the concussion of the air, injured the building insured:—*Held*, that such injury is not covered by the pol. If, however, the explosion had been occasioned by a fire upon the premises insured, the loss occasioned by the explosion would be within the pol. [15 La. An. 217.]

On the 15 Jan. 1864, a vessel called *Lotty Sleigh*, lying at anchor in the Mersey, and laden with gunpowder, caught fire and blew up. The concussion of the air produced by the explosion caused considerable damage to property in the neighbourhood, and for several miles round, particularly to windows and glass. Out of this explosion arose the following case—*Taunton* v. *Royal* Ins. Co. [of Liverpool].

The pol. of the Co. contained the usual condition of exemption: "neither will the Co. be responsible for loss or damage by explosion, except for such loss or damage as shall arise from explosion by gas." The directors, however, resolved on this occasion to pay the losses resulting to their pol.-holders. On this fact becoming known, Mr. Taunton, one of the shareholders in the Co., filed a bill on behalf of himself and the other shareholders, against the Co. and the directors, praying for a declaration that the application of the funds of the Co., or any part thereof, in paying or making good any loss or damage occasioned by the above-mentioned explosion upon or in respect of any pol. of ins. granted by them against loss or damage by fire, was unauthorized and improper; and that the Co. might be restrained by injunction from paying any claims arising from such loss or damage, if any; and might be decreed to refund the amount, if any, already paid. The plaintiff obtained an interim order to that effect.

On the motion coming on to continue the injunction, it was by consent argued as a motion for decree. There was no dispute about the facts. Evidence was produced that the *Guardian*, the *Phœnix*, the *Sun*, and the *Alliance* had paid the claims under their pol. arising out of this explosion; and also that it was usual for ins. cos. to make such payments.

The counsel for the plaintiff contended that this was not a loss or damage by fire, or a loss or damage at all within the terms of the pol. The Co. had expressly defined the pol. as a pol. to ins. against loss or damage by fire, and in order to make quite clear what was meant they had expressly excluded any loss or damage resulting from explosions other than gas, in the words already quoted. The powers given in the D. of Sett. of the Co. to the directors must be governed by the ordinary rule of partnership, and the conditions expressed in the pol. The directors were in the habit of treating all claims in the most liberal manner, and they were right in so doing, in order to gain popularity; but they could not, where there was not even a colourable claim, give away the money of the Co. They could not, for instance, subs. out of their funds to a public school or other building for the purpose of making themselves popular. If other ins. cos. had paid such claims, they had done so *ex gratia*; and if the defendants wished to be generous, it must be with their own money, not with the plaintiff's. Although the amount in the present case was not large, still, if a precedent was established, the Co. might render itself liable hereafter to very heavy payments. It was impossible to say that damage caused by concussion of air was damage caused by fire. The damage must arise from a proximate cause within the pol. In support, they cited *Ionides* v. *Universal* Marine Ins. Co.—a marine ins. case.

The counsel for the Co. submitted that the payment of these losses was entirely left to the discretion and judgment of the directors, and was a question of the internal management of the Co., with which the Court could not interfere. If the shareholders did not approve of the conduct of the directors, they could remove them under the powers of the deed. Under certain clauses of the deed the directors had very full powers, particularly with regard to the settlement of claims. The form of pol. was not prescribed by the deed, but was left to the discretion of the directors. What the directors proposed to do was within the powers given by the deed, and they could, if they pleased, recall all the existing pol., and grant new ones without the exception of the risk as to explosions.

The Vice-Chancellor Wood *held*, that this was a matter of internal management, and that, having regard to the powers of the directors and the purposes of the Co., the directors were justified in making the payments, the damage having been done by something which, though not within, was analogous to the risk insured against.

It may be mentioned that the claims proposed to be recognized by the Co. were about 80 in number, averaging about £12 or £13 each.

The Erith explosion took place on the morning of the 1st Oct. 1864, in the gunpowder magazines of Messrs. Hall & Co., situate on the banks of the Thames, about 13 miles from Lond. It is believed to have been occasioned by some accident to a barge in the river being laden with powder from the magazine. The magazine contained about 45 tons of gunpowder, all of which exploded. Some 13 persons lost their lives, and the shock was felt at some 50 miles distance. In the more immediate neighbourhood, and even at some considerable distance, walls were thrown down, windows driven in, glass broken, and furniture destroyed. Various claims were made upon the fire ins. offices; but they resisted. Finally the case of *Everett* v. *London Assu.* Corp. was tried, where the words of the pol. rendered the insurers liable to make good "such loss or damage as might be occasioned by fire"—the usual wording being "loss or damage by fire" alone.

It was argued by the counsel for the plaintiff that besides the words "occasioned by fire," the injury contemplated by the pol. was not confined to a fire on the premises, but included every injury occasioned by fire in any way and at any distance. That a condition of the pol. negativing the liability of the Co. when more than 25 lbs. of gunpowder were kept on the premises, showed that the parties contemplated the possibility of losses by explosions of gunpowder. That in the case of injury to a house by water, in putting out a fire in an adjoining house, it was the common practice of ins. offices to treat the damage as arising from fire. That if the injury were caused by an explosion of gas in the next house, the loss would be made good. That the only difference was, that here the explosion was at a greater distance. That it did not follow that this injury was not contemplated by the pol., because an explosion of this kind was not the ordinary incident of all fires. That whenever a fire takes place, a disturbance of the air follows, only the more rapid and violent when gunpowder or gas suddenly ignites; and that the Co. must be liable here, when the loss arose from the ignition of the particular article—gunpowder.

That in a recent scientific treatise by Prof. Tyndall, it had been shown that fire was the motion of the particles of the air when heated; and that this concussion of the air was nothing more than a movement of the particles, similar in fact to fire itself.

The counsel for the Co. contended, that the loss in question was not within the meaning of the pol., or the intention of the parties, as to damage by fire. That the atmospheric disturbance was the *causa proxima*, and the fire only the *causa remota:* which would not be looked to in construing the rights of the parties. That were it otherwise, injury occasioned to buildings by an earthquake, which was usually attributed to the motion of subterranean fire, or upon the shattering of window glass by the salvos of artillery at a review, would be damage by fire. It was also urged that there must be actual ignition, or the action of fire upon the property.

The Court was unanimous in favour of the defendants. Chief Justice Erle said the decision depended entirely upon the question,—What was the meaning of the parties under the contract? The true construction of the words constituting the contract was that they did not apply to the damage in question. This view was further sustained by the conditions indorsed on the pol. Mr. Justice Willes said: In these ins. cases we are bound to look to the immediate cause. In this instance it cannot be said that the loss was "occasioned by fire"; it was occasioned by a concussion caused by fire; and we must therefore go to the cause of causes before we arrive at the origin of the loss. But then this is not what was contemplated by the parties to the pol. Mr. Justice Byles said: Unless there is some reason to the contrary, the words "loss or damage by fire" must be construed according to ordinary rules; that is, the damage was to be either from the ignition of the article consumed, or by the burning of part of the premises. In the one case there would be loss, in the other damage. If we were to hold that there was loss or damage in this case, we should offend against a rule of Lord Bacon, who says, "It were infinite for the law to consider the causes of causes, and their impulsions one of another; therefore it contenteth itself with the immediate cause, and judgeth of acts by that, without looking to any further degree." If that were not so, and a ship was in the neighbourhood of Etna or Vesuvius, and was violently shaken by an eruption, that would be damage by fire; or if a gun were fired off loaded with small shot among crockery, that would be damage by fire; or it might be said if the heat of the sun were too great, that would be damage by fire. The ordinary sense in which a plain man would understand this case may well be the one to guide us.

On the 2 Oct. 1874, occurred the last great explosion of gunpowder which we have to refer to here. A number of barges were being towed through the Regent's Canal by a small steamer, one of which, called the "Tilbury," was stored with some 5 tons (11,200 lbs.—about one-tenth of that at Erith in 1864) of gunpowder, while the remainder of her cargo was made up of petroleum, and miscellaneous goods. About 5 o'clock in the morning the boats had reached a part of the canal situated in a deep cutting in Regent's Park, near St. John's Wood, when at a spot known as North Bridge, an explosion occurred of the gunpowder on the Tilbury, which caused great destruction of house property in the immediate locality; and of windows in a radius of upwards of a mile. There was very little loss of life. But for the position of the barge in a deep cutting at the time of the explosion, the damages must have been much more severe; as also the loss of life.

Out of this explosion arose many questions affecting the subject of ins. The fire ins. cos. were called upon to make good the damage to buildings; the plate-glass ins. cos. to replace broken windows. But these cos. referred to the conditions of their pol., where, in most cases, as regards the fire ins. cos., all explosions otherwise than from gas were exempted; and as to the glass ins. cos., their pol. exclude all liability either from fire or explosions. This was not always so: it is only within late years that ins. cos. have become so much alive to the consequences of explosions. Hence, an early pol. of the *Alliance*, on the Regent's Park Baptist College, rendered that Co. liable to the loss of £2600, if that extent of damage had been incurred. Considerable damage was done, and the Co. paid the claim. Some of the glass ins. cos. paid claims under their early pol.

The ins. offices not being liable, the question arose upon whom the loss was to fall. It was thought the Grand Junction Canal Co. would be liable; but this could only be in the event of their not having complied with the provisions of the law regarding the removal of explosives; or in the event of great negligence.

A committee was formed to ascertain the amount of damage. They returned it at £33,000, extending over 1500 houses. But large numbers of persons who sustained damage to glass made no return to the committee. Many persons in humble life, whose damage did not exceed £10, were relieved by voluntary subscription.

The occurrence of this explosion on the 2nd Oct., while the Erith explosion had occurred on the 1st of the same month, and others at various dates, led to a statement that explosions of gunpowder were peculiarly liable to occur during the month of Oct. In view of testing this statement—which, if true, might lead to preventitive measures—we have compiled the following list of gunpowder explosions, including those at Powder Mills, where, if any law at all obtained, its recurrence would be likely to make it manifest.

The list bears evidence of not being perfect. All that can be said of it is that it is more complete than any other of which we have any knowledge; and it certainly does not bear out the theory stated. In the autumn of the year gunpowder is more frequently in transit, at least in small quantities, for sporting purposes; but this circumstance has not perceptibly increased the number of explosions. The month which stands first in number is Sept.; next Dec.; that which stands last is Feb., in which no case is recorded in our list; July next. Oct. stands 4th on list.

Table of Gunpowder Explosions.

1649, 4 Jan.	60 houses blown up opposite Barking Church by explosion in a shop in Tower Street.
1654, ——	Explosion of a magazine at Gravelines; about 3000 people killed.
1693, ——	At Dublin 218 barrels exploded, killing about 100 men.
1739, 10 Sept.	Explosion at Bremen, by which about 1000 houses were destroyed, and 40 persons killed.
1758, 11 Mar. 6 Aug. 29 Dec.	Three serious explosions at the Hounslow Mills.
1762, 11 Aug.	The city of Worcester was greatly damaged by a gunpowder explosion.
,, 15 Oct.	Goree nearly destroyed.
1765, 3 Dec.	Two mills blown up at Waltham.
1767, 1 Jan.	The Royal Mills at Faversham blown up.
1768, 10 May	An explosion at Ewell Mills destroyed property valued at £8000.
1769, 18 Aug.	Powder mag. at Brescia caused by *lightning*; about 3000 deaths.
,, ——	About the same date a mag. at Venice, by *lightning*; 400 killed.
1770, 1 Sept.	Explosion at Faversham.
,, 27 Sept.	Explosion at Hounslow.
1771, 18 Sept.	Explosion at Moulsey; 3 men killed.
1772, ——	Trichinopoli blown up; 300 inhabitants lost their lives; 340,000 ball cartridges were destroyed; and the whole foundations shaken.
1772, 6 Jan.	Three mills blown up at Hounslow.
,, 5 Nov.	An explosion at Chester destroyed many spectators at a puppet-show, and greatly damaged many houses.
1773, ——	Explosion at Chamberry; 18 persons killed, and several houses destroyed.
,, Nov.	Abbeville nearly destroyed; 150 inhabitants perished; 100 houses destroyed.
1774, 24 April	Explosion at Hounslow; 2 persons killed.
1776, 20 Aug.	Explosion at Picardy.
1777, 16 Aug.	The Epsom Mills were blown up.
1779, 26 June	Vienna received great damage, and several lives were lost by gunpowder explosion.
1779, Sept.	Civita Vecchia nearly destroyed.
1780, 18 Aug.	Malaga, gunpowder mag. exploded by *lightning*.
1782, March	Sumatra, gunpowder mag. exploded by *lightning*.
1785, May	Tangiers, gunpowder mag. exploded by *lightning*.
1789, 11 March	A magazine destroyed by fire at Corfu; 72,000 lbs. of powder and 600 bombshells blew up; 180 men killed.
,, 3 Oct.	Explosion at Faversham.
1790, 12 Oct.	An explosion at Dartford Mills; 6 men killed; great destruction of property.
1792, 28 June	At Lubin, in Poland, the axle-tree of a carriage conveying powder to the army took fire, and destroyed a great number of houses and some public buildings; about 90 persons killed and wounded.
1793, 10 July	At Bayonne the chapel at the new castle was blown up, and 100 lives destroyed.
1793, Sept.	The barracks at Youghal blown up.
1794, 3 Sept.	Powder mills at Grenelle, near Paris, exploded; near 3000 persons lost their lives; and all adjacent buildings were destroyed.
1794, 20 Dec.	Landau had its arsenal blown up.
,, 31 Dec.	Explosion at Dartford Mills; 11 men killed.
1796, 14 Jan.	Explosion at Hounslow Mills; 3 men killed; great destruction of property.
,, 10 Aug.	Explosion at Dartford; 4 persons killed.
1798, 20 May	Explosion at Battle Mills; 3 killed, and great destruction of property.
1799, 14 Jan.	Explosion at Dartford; 3 persons killed.
,, 13 July	Explosion at a mill on Twickenham Common; 4 men killed.
1800, 28 May	A powder mag. at Nantes blew up, destroying many persons and houses.
1801, 20 March	Explosion at Battle Mills; 1 man killed.

1801, 25 April	Explosion at Waltham Mills; 9 men killed.
1802, 8 Sept.	Explosion at Faversham Mills; 6 men and 3 horses killed.
1805, 15 June	Explosion at Dartford; 2 men killed.
,, 1 Oct.	Explosion at powder mill, Roslin, near Edinburgh; 2 killed.
1807, Jan.	A vessel lying in the Rapenburg canal, Leyden, blew up and destroyed the best built portion of this interesting city.
,, 26 June	Explosion of power mag. at Luxemburg, occasioned by *lightning*.
,, 18 Sept.	Explosion at Faversham Mills; 6 men and 3 horses killed.
1808, 9 Sept.	Explosion of powder mag. at Venice, occasioned by *lightning*.
1810, 16 Jan.	Explosion at Faversham Mills; 5 men, a boy, and some horses killed.
,, 24 Sept.	Explosion at Dartford Mills; 2 men killed.
1811, 27 Nov.	The Waltham Mills blown up; 7 men killed.
1812, 4 July	Explosion at Hounslow; 2 men wounded.
,, 14 July	The Roslin Mills, near Edinburgh, blown up; 2 men killed.
1813, 21 Aug.	Two explosions at Hounslow Mills; 3 workmen killed.
1814, Sept.	Explosion at Battle Mills; 3 men killed.
1816, 16 April	The Toulouse Powder Mills exploded; 16 killed, others wounded.
1817, 3 Oct.	Explosion at Faversham Mills; 3 men killed.
1818, 19 March	The powder mills at Brandy-Wine, U.S., exploded; 30 killed, many wounded.
1829, 28 Nov.	The powder mag. at Navarino exploded, caused by *lightning*.
1840, 6 June	The powder mag. at Magazan, Bombay, exploded, caused by *lightning*.
1843, 13 April	Explosion at Waltham Mills; 7 men killed, and buildings destroyed.
,, 22 April	Powder mag. at Puzzaloni, Sicily, exploded, caused by *lightning*.
,, 23 April	Powder mag. at Gaucin, Spain, exploded, caused by *lightning*.
1850, 11 March	Three explosions at Hounslow Mills; 8 persons killed.
1853, ——	Explosion at Hounslow Mills; caused by *lightning*.
1855, 7 Oct.	Explosion of firework factory in Green Street, Liverpool, caused by *lightning*.
1856, 6 Nov.	Explosion of powder mag. at Rhodes, caused by *lightning*.
1857, 10 Aug.	Explosion of powder mag. at Joudpore, Bombay, caused by *lightning*.
1859, 30 March	The Hounslow Mills blew up; loss of 7 lives.
,, 6 Aug.	The Ballincollig Mills, near Cork, blew up; 5 persons killed.
1860, 10 Sep.	Explosion at the Melford powder works, Argyleshire; 6 men killed.
,, 1 Dec.	Explosion in shop at Norwich; 2 persons killed, and much property destroyed.
1861, 21 Jan.	Explosion at Gov. manufactory for hand-grenades at Chatham; 1 killed, and several injured.
,, 27 May	The Waltham Mills blew up; 1 killed, and many others wounded.
1862, 9 Sept.	Explosion at the Nance Kuke powder mills, Cornwall; 6 women killed.
1864, 1 Oct.	Explosion at Erith, of which we have already given full account.
,, 9 Dec.	Powder store at Buenos Ayres exploded, killing 160 soldiers.
,, 16 Dec.	The Lottie Sleigh exploded in the Mersey, at Liverpool, of which we have given full account.
,, 24 Dec.	A powder vessel exploded at Wilmington, U.S., without other damage.
1865, 29 March	Explosion at Faversham Mills; 2 persons injured.
,, 11 April	Four or five barrels of powder exploded in a shop in Southwark.
,, 24 May	Explosion at Mobile, U.S.; about 300 persons killed.
,, 21 Sept.	A firework manufactory at Manchester exploded.
,, 25 Sept.	Explosion at Ewell Mills; 2 men killed.
,, 26 Sept.	Firework manufactory blew up at Bristol.
1867, 28 Dec.	Great explosion at Faversham Mills; 11 men killed, and much damage done; shock felt at Canterbury, 10 miles off.
1868, 21 Dec.	Another explosion at the Faversham Mills.
1870, Dec.	Explosion at Messrs. Ludlow's works at Birmingham; 53 persons killed.
1872, 6 Sept.	Explosion at the Hounslow Mills; 3 lives lost.
1874, 2 Oct.	Explosion of powder in the barge Tilbury, on the Regent's Canal, of which we have already given an account.

As coming under a different category from any of the explosions already named may be mentioned that wilfully occasioned by the Fenians in an attempt to destroy the Clerkenwell House of Detention in order to release some comrades on the 13th Dec. 1867, at 3·45 P.M. A single barrel of gunpowder was fired at the foot of the prison wall; and the following catalogue of consequences was given in the *Times* 29th April, 1868: 6 persons were killed outright; 6 more died from its effects, as found by coroners' inquests; 5 in add. owed their deaths indirectly to this cause; one young woman was in a mad-house; 40 mothers were prematurely confined, and 20 of the babies died from the effects of the explosion on the women; other of the children are dwarfed and unhealthy; one mother had become a raving maniac. 120 persons were wounded, 15 being permanently injured, with loss of eyes, legs, arms, etc. There was also about £20,000 worth of damage done to property. The neighbourhood was a densely crowded one. We believe there was no attempt to claim on the ins. offices in regard to the property; but the life offices and the accident ins. cos. stood to suffer. The case did not come under CIVIL COMMOTIONS.

Household Boilers.—Nearly every house built for genteel occupation, either in town or country, has a close-boiler kitchen range, intended to supply a bath-room and other portions of the house with hot water. A certain number of explosions ann. arise therefrom, producing mostly considerable injury to property; and not unfrequently loss of life. The fire offices exclude the consequences of fires resulting from such causes from their pol., under the general exemption of liability from explosions. The steam-boiler cos. now insure these risks. [HOUSEHOLD BOILERS, INS. OF.]

Lightning.—The electric fluid of the clouds has, in passing to the earth, been the cause of many serious explosions. It is very difficult to obtain complete returns of such casualties. All such cases as we have met with are included and specified in the list of explosions we have given under sub-heading "Gunpowder." Prob. many others have occurred, of which there is no distinct record. At the Dartford Mills it is one of the regulations that during storms the workmen leave the magazine, taking care to secure all doors and windows. [LIGHTNING.]

Loss of Life.—Life, health, and accident ins. cos. pay in case of death by explosion, in the absence of fraud, and on proof of identity. Some of the steam-boiler ins. cos. have powers to ins. specific sums on work-people in case of death by explosion of boiler. Schemes have been proposed to insure miners in the event of death by explosion. [MINERS, INS. OF.]

Ships.—If ships be insured under fire pol., as they usually are while in dock or harbour, being laden or unladen, the pol. does not cover explosions from whatever cause arising. But ordinary marine pol. generally cover the risk of explosion. [STEAM-SHIPS.]

Steam-boilers.—Since 1859 the bus. of ins. steam-boilers has been a recognized, and a constantly increasing branch of ins. bus. The loss of the boiler, however, may and frequently does constitute but a small portion of the entire loss in such cases. There is usually a greater or less destruction of buildings; frequently considerable damage to machinery or stock; and too often sacrifice of life. Each of these several risks may be insured against—STEAM-BOILER INS. COS. But there are several cases presenting different points to be mentioned here.

In *Millandon* v. *New Orleans* Ins. Co., before the Supreme Court of Louisiana, 1849, the action was to recover the value of a quantity of sugar and molasses destroyed in the sugar-house of the plaintiff by the explosion of the steam-boiler, which was used in the manufacturing of sugar; the loss being alleged to have been caused by fire. The sugar and molasses were covered by an ordinary fire pol., and the value of the articles destroyed was proved to be 6500 dols. The damage done was confined exclusively to that produced by the explosion; none having been done by fire. The Court below found for the defendants; this finding was now confirmed:—*Held*, that the chances of loss by explosion are not the same as those from fire: the former being dependent on the condition of the machinery, the mode in which it operates, and the care and attention with which its operation is overlooked.

In *St. John* v. *American* Mut. Fire and Marine Ins. Co., before the Court of Appeals, N.Y., 1854, the pol. by which the property was ins. against loss or damage by fire contained a condition that the insurers would not be liable for any loss occasioned by the explosion of a steam-boiler; and there was an explosion of a steam-boiler in use in the building where the property was situated, whereby fire was brought in contact with and consumed property:—*Held*, that the loss was within the exception created by the condition, and the insurers not liable.

In *Hayward* v. *Liverpool and London* F. and L. 1860, where the pol. insured against loss or damage by fire "on the building occupied as an India-rubber factory, and on property contained therein, and on machinery, tools, steam-engine, and shafting," and provided that the Co. "shall not be liable to make good any loss or damage by fire which shall happen or arise by any explosion." One of the conditions forming part of the pol. declared that "neither will this Co. be answerable for loss or damage by explosions of any kind." The insured premises and property were destroyed by a fire, "which originated from and was caused by an explosion of one of the boilers of the steam-engine belonging to, and used in, the said India-rubber factory, and covered by said pol.:—*Held*, the Co. is not liable for the loss, even though the steam-engine was necessary and ordinarily used in carrying on the bus. of an India-rubber factory. [7 Bosw. N.Y. 385.]

In the *Mut.* Ins. Co. v. *Tweed*, before the Supreme Court of the U.S. on appeal in 1868, the facts were these: Cotton in a warehouse was ins. against fire, the pol. containing an exception against fire which might happen "by means of any invasion, riot, or civil commotion, or any military or usurped power, *explosion*, earthquake, or hurricane." An explosion took place in another warehouse, situate directly across a street, which threw down the walls of the first warehouse, scattered combustible materials in the street, and resulted in an extensive conflagration, embracing several squares of buildings, and among them the warehouse where the cotton was stored, which, with it, was wholly consumed. The fire was not communicated from the warehouse where the explosion took place directly to the warehouse where the cotton was, but came more immediately from a third building which was itself fired by the explosion. Wind was blowing (with what force did not appear) from this third building to the one in which the cotton was stored. But the whole fire was a continuous affair from the explosion, and under full headway in about half an hour:—*Held*, that the insurers were not liable; the case not being one for the application of the maxim, *Causa proxima, non remota, spectatur*.

In 1868 Mr. Lavington E. Fletcher read before the Brit. Asso. Meeting at Norwich, a paper, *On the Unsatisfactory Character of Coroners' Inquests consequent on Steam-boiler Explosions*. This paper we have already noticed under CORONERS. It will be further commented upon under STEAM-BOILER EXPLOSIONS.

Steam-ships.—Steam vessels embody a double risk of explosion, viz. from their own boilers, as well as from the cargo on board. A fire ins. pol. will not cover either of these losses; but a marine pol. will cover both, unless there be any special exemption. The following cases are in point.

In the case of *Waters* v. *The Merchants' Louisville* Ins. Co., before the Supreme Court of the U.S. 1837, it was *held*, that the burning of a steam-boat, caused by the explosion of gunpowder on board, was a "loss or damage by fire" within the meaning of the pol.

In *Perrin* v. *Protection* Ins. Co., heard before the Supreme Court of Ohio, on appeal, 1842, the pol. was to insure one-half of three-eighths of "the hull, tackle, and apparel of the steam-boat Moselle." The risks insured against were those of "the seas, rivers, fires, enemies, pirates, rovers, assailing thieves, and all other losses and misfortunes, which shall come to the damage of the said steam-boat, according to the true intent and meaning of the said pol." The boat was lost by the explosion of its steam-boiler. The defence in the first trial was that the loss happened from the negligence of the master and crew. A verdict was taken for the plaintiff. A new trial was applied for on the following grounds:—1. Because the Court did not permit the defendants to ask of experts the following questions—*a*. If an explosion can occur when machinery and boilers are of good material, properly constructed, in good order, and skilfully and properly managed? *b*. If an explosion, arising from no known external cause, be not evidence of negligence?—2. Because the Court did not instruct the jury that a loss, by the explosion of the boiler, from an internal cause, is not covered by the pol. 3. From newly discovered evidence. *Held*—1. In an action on a pol. [marine] of ins., it is no defence to show that the loss was occasioned by negligence in the agents of the insured. 2. A loss of a steam-boat by explosion of the boiler is covered by the pol. 3. A new trial will not be granted on the ground of newly discovered evidence, where such evidence is merely cumulative.

In the case of *Evans* v. *Columbian* Ins. Co., heard before the Commission of Appeals, N Y., 1870, the facts were these:—In March, 1864, the plaintiff ins. in defendant Co. 25,000 dols. upon the body, tackle, and apparatus, and other furniture of the propeller steam-ship Nile for one year; the Co. taking upon itself the perils of the lakes, rivers, canals, fires, and seasons that should come to the vessel and property insured, or any part thereof, excepting misfortunes arising from divers causes, and among them, misfortunes arising "from the bursting or explosion of the boilers, collapsing of the flues, or breakage of the machinery, unless by unavoidable external causes, *or fire ensues therefrom*. It was also provided in a written and controlling part of the pol. that the clause referring to the bursting of the boilers and breakage of machinery should be interpreted as follows: "This pol. does not cover any loss or damage done by the bursting of boilers, collapsing of flues, or breakage of machinery, unless occasioned from some unavoidable external cause, or fire ensues; *but any loss or damage occurring to the vessel subsequent to and in consequence of the bursting of the boilers*," collapsing of flues, or breakage of machinery, is covered by the pol. In May following, while navigating the Detroit River, the boiler of the vessel "exploded, and thereby became burst, the immediate effect of which was to cause large quantities of steam to escape therefrom, through the rents and apertures caused by the bursting; which steam, thus escaping, passed to the hull and body of the vessel, making large rents and apertures therein, through which large quantities of water then commenced to enter within said vessel, insomuch that from 5 to 10 minutes after the explosion, the vessel by the weight of the water sank, and became and was a total loss." From a photograph of the vessel, exhibiting what the parties agreed was a truthful representation of her appearance after she was submerged, it appeared that what is described as rents and apertures was a complete uncovering of the ribs of the fore-quarters of her bow, leaving nothing to obstruct the flow of the water of the river into her, and causing her to sink:—*Held*, that as the vessel was manifestly worthless the moment the explosion had occurred, *the loss was immediate upon*, not subsequent to, the explosion, within the meaning of the pol. Judgment for defendant Co., confirming judgment below. Mr. Commissioner Gray said, "When the injury is such that the consummation of the loss insured against commences, as in this case, the moment the injury is inflicted and is certain to be speedily effected, it is not divisible, part immediate, part subsequent, but immediate and total, whenever the thing is rendered, the moment of the injury that caused it, of no value. This vessel was manifestly worthless the moment the rents and apertures were made."

A few additional points remain to be noticed. Mr. Griswold [*Fire Underwriters' Text-Book*, 1872] says, "Explosions are another fruitful source of fires. Various trades and occupations are more or less liable to have explosions occur in the ordinary prosecution of their bus.; such as brass and iron foundries; soap and candle factories; where steam-boilers are used; and where inflammable gases are generated."

The ordinary formula of exemption from explosions in the U.S. fire pol. differs from that in the British pol., and is as follows:

> Nor for any loss caused by the explosion of gunpowder, camphene, or any explosive substance; nor by lightning or explosions of any kind, unless fire ensue; and then for the loss or damage by fire only, which loss shall be determined by the value of the damaged property after the casualty by explosion or lightning.

The point here is that the ins. co. only becomes liable for the value of the materials of the building or stock as lying immediately after the explosion, in the event of fire then ensuing—and that appears to us to be the proper distinction.

In the case of the *Commercial* Ins. Co. v. *Robinson*, before the Supreme Court of Illinois, 1872, on appeal, the pol. provided that the Co. should not be liable "for any loss or damage by fire caused by means of an invasion, insurrection, riot, civil commotion, or military or usurped power; . . . nor for any loss caused by the explosion of gunpowder, camphene, or any explosive substance, or explosion of any kind." The nature of the explosion is not stated in the rep. before us; the question turning mainly on legal construction. The Court *held*:—1. That "equivocal expressions in a pol. of ins., whereby it is sought to narrow the range of the obligations these cos. profess to assume, are to be interpreted most strongly against the Co." 2. That the last clause of the provision "refers to losses by explosions simply, without reference to fire;" and that "it secures exemption from liability for losses caused by explosions, but not from liability for losses by fire caused by explosion."

In 1874 was projected the *British, Colonial and Foreign Property* Ins. Corp., one of the objects of which was to ins. against loss or damage arising from explosions.

In the *Austrian* Empire ins. against explosions is made a regular branch of bus. In 1871 there were at least four cos. undertaking this class of bus., viz.:

The *Adriatic Ins. Bank*, for Fire, Lightning, Explosions.

The *Austrian Phœnix*, for Fire, Lightning, Explosions, Hail.

The *First Bohemian* Ins. Co., for Explosions, Hail, Sea, River, and Land Transport.

The *K.K. Priv. Adriatic Ins. Union*, for Life, Fire, Lightning, Explosions, Sea, River, and Land Transport.

In *Italy* there was one: The *Milan* Ins. Co., for Life, Fire, Lightning, Explosions.

EXPLOSIONS, Ins. against Deaths from.—The *Boiler Ins. and Steam-Power* Co. issue pol. of ins. "on lives of enginemen, stokers, and all persons attendant upon boilers and engines; also workpeople employed in manufacturing estab. *liable to injury and death from boiler explosions.*"

EXPLOSIVE Substances; Manufacture, Storage, and Removal of.—The known danger to life and property of many explosive substances now familiar in the arts, and in commerce, and rapidly becoming employed in various industrial and manufacturing processes, while some are now ordinary articles of use in our households, has properly enough called for legislative interference. Some examples of these dangers have already been given in the preceding art. Explosions, in the case of the Gateshead Fire, 1854 (sub-heading "Chemical Stores"); and more recently in the case of the Regent's Canal Explosion, 1874.

The greatest possible misapprehension prevails on the subject. It may be stated as a principle, that by the common law of our land it is an indictable offence to do or keep anything calculated to be of injury to the public, or involving the risk of such injury; and if death or damage result from such indictable nuisance, then the parties responsible may be liable to indictment, or to an action at law for damages. The action of Parl., therefore, has been called into requisition, not for the purposes of prohibition, but in view of permitting the manufacture, storage, and removal of explosives under regulations adapted to the public safety.

In the case of *Rex* v. *Taylor* (1742), the Court granted an information against defendant as for a nuisance, on affidavits of his keeping great quantities of gunpowder, to the endangering the church and houses where he lived. These proceedings appear to have been taken at common law, and not under the special enactments which had previously come into force; but the operation of which was indeed limited to the Metropolis. These legislative measures we now proceed to notice.

In 1718 was passed 5 Geo. I. c. 26—*An Act for preventing the mischiefs which may happen by keeping too great quantities of gunpowder in or near the Cities of Lond. and Westminster, or the suburbs thereof.*

In 1724 was passed 11 Geo. I. c. 23—an Act for making more effectual the provisions of the last-named Act.

In 1732 was passed 5 Geo. II. c. 20, which gave powers to search for gunpowder on board ships or vessels on the Thames at or below Blackwall.

In 1742 was passed 15 Geo. II. c 32—another measure almost analogous to that of 1718.

In 1749 was passed 22 Geo. II. c. 38—*An Act to prevent the mischiefs which may happen by keeping too great quantities of gunpowder in any one place, or carrying too great quantities of gunpowder together from one place to another.*

In 1771 was passed 11 Geo. III. c. 35—*An Act for reducing into one Act of Parl. the several laws relating to the keeping and carriage of gunpowder; and for more effectually preventing mischiefs by keeping or carrying gunpowder in too great quantities.* This Act embodied many admirable precautions for the public safety.

In the following year was passed 12 Geo. III. c. 61—*An Act to regulate the making, keeping, and carriage of gunpowder within Gt. Brit., and to repeal the laws heretofore made for any of those purposes.* By this Act it was declared that the manufacture of gunpowder, though necessary, ought to be regulated by law in order to prevent the great mischiefs which may arise by explosions. The Act provided that no dealer should have more than 200 lbs. at one time, except in carriages or vessels for conveyance, within Lond. or Westminster or a mile of those places (or any other city or borough), and that no greater quantity than 25 barrels should be conveyed at one time by land, or 200 barrels in any barge, and that in barrels close joined and hooped without any iron about them, and so secured that no part of the gunpowder be scattered; and when conveyed by land the carriage was to be covered with wood or tarpaulin; and when by water, under close deck and covered with raw hides or tarpaulin; and there were other provisions against delay in loading or unloading, etc. This Act (which remained in force until 1860) left the common law on the subject entirely unaffected, and only operated in aid of the common law, and by way of prevention.

In the case of *Crowder* v. *Tinkler*, before Lord Chancellor Eldon in 1816, on an application for an injunction to restrain the deposit of gunpowder in a magazine near the house of the plaintiff, that learned Judge said,—"It is conceived that at common law the erection of a corning-house of this sort, if attended with danger to the public, would still not be a nuisance. To that I do not agree, for though gunpowder is an article of modern origin, the principle of law is that any subject of modern discovery cannot be used in such a manner as to constitute nuisance. The instance has occurred of a conviction upon a prosecution for employing a reservoir of gas in a place where an explosion might be dangerous to the King's subjects or their property. If the mill was so constructed or placed on such a site that it would have been a nuisance in law from the danger attending it, this statute would not make it legal, if carried on in a mill which from its construction or site would be a nuisance at common law." He, therefore, at once granted an *ex parte* injunction, observing, "When the subject of complaint is matter of public nuisance, the Attorney-General alone can sue; but it is going too far to say that if a plain nuisance is attended with particular and special injury to an individual, producing irreparable damage, he should not be allowed to come to this court." He said also the complaint is to be considered not as of public nuisance simply, but as what, being so in its nature, is attended with extreme prob. of irreparable injury to the property of the plaintiffs, including also danger to their existence, and on such a case, clearly estab., an injunction would be granted. He added: "The Act of Parl. does not affect the jurisdiction, either at law or in equity. If it were a mere public nuisance, I could not interfere, the remedy being by indictment; but the proper course is that the plaintiff shall indict the building as a nuisance, and meanwhile put the concern in such circumstances that it may be carried on without imminent danger, undertaking so to carry it on that no more powder shall be kept there than is necessary for the purpose of carrying on the trade." In that case, therefore, Lord Eldon held that keeping any great quantities of gunpowder even in a country village near houses or a highway was a public nuisance indictable at common law, and that this was not at all affected by the Act except so far as the Act expressly and in terms authorized the thing complained of. So remained the law until 1860.

In 1846 was passed the 9 & 10 Vict. c. 93, known as Lord Campbell's Act, providing for the recovery of compensation by the personal representatives of persons killed by accident where negligence can be estab. In any case of explosion where the provisions of the legislature have been disregarded, an action for damages would lie under this Act.

In 1860 was passed the 23 & 24 Vict. c. 139—*An Act to amend the Law concerning the making, keeping, and carriage of gunpowder and compositions of an explosive nature; and concerning the manufacture, sale, and use of fireworks.* This repeals former Act (1772) as to gunpowder, and also 9 & 10 Wm. III. c. 7 (1697), and 5 Geo. II. c. 12 (Ireland, 1731)—the last two relating to fireworks—and enacts a long series of regulations as to the making and keeping of gunpowder, percussion caps, etc. Justices to grant licences for making and keeping gunpowder, caps, etc. Owners of mills empowered to make rules for their servants and workmen in view of preventing accidents; and penalties may be inflicted for doing any act tending to cause explosion. Sec. of State may authorize person to inspect mills, etc. Quantity of gunpowder to be kept by persons other than manufacturers limited. Not more than 30 barrels of gunpowder to be conveyed by land, or 500 barrels by water, at any one time (s. 20). This not to hinder unlimited quantities being conveyed from or to ships below Blackwall (33). Penalty for smoking on board vessels loaded with gunpowder (22). Justices may issue search warrants (25). Regulations for security of vessels in the Thames. Act not to extend to mills on Crown lands, or H.M. ships. With many minor provisions.

This Act was amended by 24 & 25 Vict. c. 130 (1861), and extended to makers of safety-fuzes; and further amended by 25 & 26 Vict. c. 98 (1862). Magistrates of police to exercise powers of the Act within the Dublin police district.

In 1866 was passed the 29 & 30 Vict. c. 69—*An Act for the amendment of the Law with respect to the carriage and deposit of dangerous goods.* Nitro-glycerine was to be deemed dangerous, and Act of 1862 extended to it. Other goods might be so declared by Order in Council. All such goods intended for transport are to be marked, and notice given of their character; otherwise penalties and forfeiture of goods.

In 1869 was passed the 32 & 33 Vict. c. 113—*An Act to prohibit for a limited period the importation, and to restrict and regulate the carriage of Nitro-glycerine.* This Act was to extend to "every substance having nitro-glycerine in any form as one of its component parts, or ingredients, in the same manner as if it were nitro-glycerine." Then follow regulations for manufacture, sale, and carriage; also as to possession of this substance, with right of search.

In add. to the preceding public Acts, there are a number of local and special Acts containing provisions on the subject; of which the more important are the 14 & 15 Vict. c. 67 (1851), and the 28 & 29 Vict. c. 278 (1865), both relating to the storage of explosives in Liverpool and on the River Mersey.

The principle laid down in the House of Lords case *Rylands* v. *Fletcher*, 1868, appears to have a direct bearing on the question before us, although it did not arise in regard to explosive substances. It was there held that if the owner of land brings upon it anything which would not naturally come, and which is in itself dangerous, and may become mischievous if not kept under proper control, though in so doing he may act without personal wilfulness or negligence, he will be liable in damages for any mischief thereby occasioned.

In 1874 a Select Parl. Committee was appointed "to inquire into the Law relating to the making, keeping, carriage, and importation of gunpowder, nitro-glycerine, ammunition, fireworks, and all substances of an explosive nature; and to consider the best means of making adequate provision for the safety of the public, and of the persons employed in such making, keeping, carriage, and importation; with a due regard to the necessities of the trade." The Rep. of that Committee was presented to Parl. during the same Session, and ordered to be printed. It is a valuable public document; and we propose to utilize it for our present purpose. The explosive substances to which the Committee directed its attention may be classed as follows:

1. Mechanical mixtures of nitrates with carbonaceous substances or with sulphur, constituting such explosives as ordinary gunpowder; pyrolithe, a mixture of a nitrate with carbonate of soda, sulphur, and sawdust; poudre-saxifragine, in which nitrate of baryta, saltpetre, sulphur, and charcoal are mixed in such varied proportions as to produce more or less rapidity of combustion.

2. Chemical compounds forming nitro-explosive substances. This class may be said to consist of two divisions. The first includes nitro-glycerine and its compounds, such as dynamite, lithofracteur, dualine, etc. The second comprises gun-cotton, gun-paper, cotton-gunpowder, Schultze's powder, picric powder, etc.

3. Mechanical mixtures forming chlorate explosives; also in two divisions. The first includes such explosives as Brain's blasting powder; the second comprises Erhardt's powder, teutonite, chlorated gun-cotton, etc.

4. Fulminates—that is, any substance which from its great sensitiveness is suitable for employment in percussion caps or other appliances for developing detonation. This class may also be sub-divided into fulminates of silver or mercury, etc., and the compounds of nitrogen with chlorine and iodine.

The two latter explosives are of a highly dangerous character.

5. Ammunition, including any explosives of the foregoing classes, when made up into cartridges, bursting charges for shells, fuzes or tubes for blasting and other purposes, detonating caps, torpedoes, etc.

6. Fireworks, subdivided into two classes, the first including firework composition, the second any manufactured firework or other article adapted to the production of pyrotechnic effects or pyrotechnic signals.

The Committee therefore took cognizance of almost every known substance of an explosive character. The result of the inquiry is a general condemnation of the existing law. They find that the present law does not make adequate provision for the manufacture, storage, and transport of many of the explosive substances to which their attention has been directed; in some cases it does not provide for the safety of the public, in others it imposes unnecessary restrictions. Thus the law relating to the keeping of some preparations of nitro-glycerine appears to the Committee unnecessarily restrictive as compared with the legislation relating to other explosives. In this view the Committee are fully borne out by the recent experiments of the War Office Special Committee on Explosives and by the Chemist of the War Department, who has expressed an opinion that dynamite, a preparation of nitro-glycerine, is one of the safest, most powerful, and most convenient explosive agents applicable to industrial purposes. Yet under the present law dynamite is classed with crude nitro-glycerine. With regard to storage, the Committee think that the safety of the public is not sufficiently provided for by adequate isolation of large magazines, with reference to the quantities they contain, and that great carelessness prevails in the management of consumers' magazines. They find that retail stores are wholly unregulated by legislation, and that the trade can be carried on without any supervision at all. The present law, moreover, does not in any way regulate the importation or exportation of gunpowder, and adequate provision is not made for the loading and unloading of dangerously large quantities in cities and populous places. Lastly, the Committee consider that further legislation is "urgently required" with due regard to the necessities of the trade.

With this view they proposed consolidating all existing Acts in a new Act, with power to Her Majesty in Council to extend the Act as occasion may require to any explosive substance not specifically named therein. The manufacture of explosives and the operations connected therewith, as well as the storage, transport, sale, and importation of such articles, are to be carried on only under a "common" or "special" licence. Common licences are to be obtained, as a matter of course, on application to the licensing authority, unless the person or the premises be disqualified. Special licences are to be obtained for storage of either larger quantities than are allowed by common licences or for similar quantities under special conditions. The object of this system is to throw no obstacle in the way of legitimate trade by enabling common licences, which will meet all the requirements of retail dealers, mine owners, and others, to be obtained, as a matter of right, on application to Petty Sessions or the urban sanitary authority of a district; while at the same time the safety of the public is provided for by special licences, the conditions being left to the licensing authorities, who will be guided by local circumstances, and assisted in arriving at a just conclusion by the report of a Government Inspector.

It is proposed to appoint one or more inspectors under the Act, and to give them certain definite powers. Thus it will be necessary that all premises licensed for manufacture by special licence should be passed by an inspector before use. In the event of the explosion of a magazine under a common licence, the existing licence will be *ipso facto* suspended until the inspector has reported whether the licence should continue as before, or the licensee be required to take out a special licence. Possibly, the explosion may have been due to one of those accidents which occasionally happen even in the best-regulated factories; possibly, it may have been caused by carelessness and neglect to adopt the precautions required by the law. The inspector will make due inquiry, and on his report will depend the nature of the future licence. Sometimes, however, the explosion of one building in a factory is followed by that of another or even of several. Provided these are not incorporating mills in a gunpowder factory, the occasional explosion of which must be looked upon as inevitable in the manufacture of a dangerous article, the licensee will not be able to re-erect more than one of such buildings without the written consent of the Home Sec., who may impose certain conditions as to earth mounds and traverses, so as more effectually to separate the buildings in future. But this section will not apply to existing factories unless the inspector has called attention, previous to the explosion, to the undue proximity of the buildings; and even then any action will be subject to arbitration. It will be the duty of the inspectors before licensing new factories to see that due regard is paid to the relative positions of the various houses.

It is also proposed that the Act should provide for the transport and shipment of explosives, and give power to harbour authorities and railway companies to frame such by-laws as may be necessary. Possibly, also, the Act may contain a clause obliging railway companies to carry certain explosives, the safety of which is recognized by Gov., under the same conditions as gunpowder is conveyed. Some clause of this kind is certainly wanted in the interests of trade, as the Clearing House authorities do not seem to have sufficient knowledge at present on the subject to enable them to decide whether or not they should carry wet gun-cotton—although this substance is far less inflammable than coal.

It is proposed that inspectors under the Act shall have power to make such examinations, entry, and inquiry as may be necessary to ascertain whether the provisions of the Act are complied with, also to take samples for analysis, on payment, of any substance they may consider explosive and oblige the railway companies to carry such samples. The inspector will be empowered to require a licensee to remedy any dangerous practice he may observe, subject to arbitration, as in the Mines Act: and if the matter is urgent, and contrary to the usage of the trade, he may compel the licensee to adopt a remedy forthwith, subject to an action in the County Court for damages. An inspector or properly authorized person may also seize explosives, provided he is of opinion that such a step is necessary to provide for the public safety.

The arbitrations under the Act will be conducted as in the Mines Act—that is, one arbitrator to be appointed by the appellant, the other by the respondent, and the arbitrators to nominate an umpire. Formal inquiries will also be instituted in case of accident, by an inspector, with legal assessors, as in the case of railway accidents.

Finally it is proposed specially to guard vested interests by presenting all occupiers of factories and magazines lawfully existing at the time of the passing of the Act with a "continuing certificate" of unlimited duration, and to let a Court of Law decide any difference which may arise as to the right to this certificate. The Home Secretary, when issuing this certificate, will be empowered to impose certain restrictions necessary for the public safety, such as assigning some limit to the quantities to be stored in a magazine hitherto unlimited, but all such conditions are to be made the subject of arbitration. The Act will not apply to Government works, or to Volunteer storehouses, nor will it interfere with the law of nuisance; and the Committee trust that the legislation thus indicated will add materially to the public safety, with a due regard to the necessities of the trade. A measure embodying the several provisions here stated is now [1875] before Parliament.

In the Appendix is contained T. of the factories, stores, etc., for explosives in the U.K. up to 31 March, 1874. There were then in work 29 factories for gunpowder and other explosives, viz. 23 in E. and W., 5 in Scot., and 1 in Ireland; factories for ammunition, fireworks, blasting-fuze, etc., 64, viz. 62 in E. and W., 2 in Scot.; store mag. for gunpowder, 171, viz. 135 in E. and W., 26 in Scot., 10 in Ireland; magazines for nitro-glycerine preparations, 391, viz. 297 in E. and W., 78 in Scot., and 16 in Ireland.

In 1874 also there was pub. another State document: *Reports on the necessity for the amendment of the Law relating to gunpowder and other explosives, with suggestions for a new Act.* By Vivian Dering Majendie, Major R.A. In this document is contained a vast amount of information bearing upon the subject under consideration; and one main result of its perusal is a feeling of astonishment that the casualties from explosives have not been much more numerous. He sums up his experience by stating: "I am quite sure that if the public were at all aware of the extent to which gunpowder is handled in large quantities, without any special regulations, in the middle of the metropolis and of large cities, they would be seriously alarmed, and would demand the adoption of measures for removing so patent a danger."

Towards the close of 1874 it was announced that experiments had been made in Sweden with a new explosive compound, which is stated to embody all the good and none of the bad qualities of every previously known explosive, than which it is also said to be more powerful. This new destructive agent comes to us under the very expressive name of "vigorite," but the nature of its composition is at present kept a profound secret by its inventor, who is, we understand, a Swede.

It will be instructive to notice the regulations which prevail in other countries regarding many of the substances we have been discussing.

In *France* the manufacture of gunpowder is a State monopoly. Up to 1834 about 10 lbs. (English) of gunpowder could be kept by private individuals. The quantity was then reduced to about 4 lbs. It is allowed to be sold by licensed dealers: the price being fixed by the Gov. The regulations as to transport require that the vehicles must be "escorted," and must be halted in inclosed places away from towns. The local authorities must be warned. When the amount exceeds 4 lbs., the conductor must have a bill of lading and written authority to proceed.

In *Austria* the manufacture of gunpowder and other explosives is also a State monopoly. Gunpowder is only allowed to be stored under similar regulations to those observed in the Gov. artillery magazines; and the precautions are very stringent. The storing of dynamites and explosives is regulated by special instructions bearing date 1872. Before the transport of an explosive is permitted, a certificate must be obtained from the Polytechnic Inst. at Vienna.

In *Sweden* a licence is required for the manufacture of various explosive substances, and a certificate of qualification is necessary to the applicant. The factory must be over 3 miles (English) from a city or market town, and not near churches, powder magazines, etc. The premises must also be inspected and approved by Gov. inspector. The regulations as to storage are very stringent. The dealers may not keep over 10 lbs. at one place of sale, or more than 50 lbs. in a separate store carefully closed and securely locked. Private consumers are not allowed to keep more than 2 lbs. in any city, market town, or house near; or more than 20 lbs. anywhere else. But exceptional permission to store a larger quantity in a place pronounced fit and suitable by a competent inspector may be given. There are special regulations for the carriage of nitro-glycerine compounds by rail. It is not allowed to be sent by passenger steamers, stage coaches, post packet boats, or other post-office conveyance. If over 20 lbs. be sent by public road, very special regulations must be observed.

In *Norway* explosives may not be made without a licence within a mile (English) of market towns, or wharves, or public roads; nor in certain other localities without the assent of the local authorities. No nitro-glycerine, or more than 5 lbs. of dynamite, or 10 lbs. of gunpowder, may be kept within half a mile of a town or wharf. But the police have the control of regulations for larger quantities. The regulations for transport are under the control of the Crown, and are very stringent.

Oils.—It will be observed that hitherto in this art. we have said nothing respecting petroleum, and other mineral oils, usually regarded as explosive. The reason is that these oils in themselves cannot be called explosive. They do, however, when exposed to certain degrees of temperature, throw off highly explosive vapours; and in this view they have become subject to legislative restrictions. Hence we propose to deal with them briefly here.

In 1862 was passed the 25 & 26 Vict. c. 66—*An Act for the safe-keeping of Petroleum*, which recites: "Whereas it is expedient to provide for the safe-keeping of petroleum and certain products thereof that are dangerous to life and property from their properties of giving off inflammable vapours at low temperatures." It then lays down regulations to be observed by ships carrying petroleum; and regulations as to storing the same, viz. "not more than 40 gallons of petroleum shall be kept within 50 yards of a dwelling-house, or of a building in which goods are stored, except in pursuance of a licence given by such local authority as is hereinafter mentioned." Any petroleum kept in contravention to be forfeited; and right of search instituted.

In 1868 was passed the 31 & 32 Vict. c. 56—an Act to amend the last-named Act.; and therein is contained the following definition:

> 3. For the purposes of the Petroleum Acts, 1862, 1868, including all local acts and by-laws relating to petroleum, or the produce thereof, "Petroleum" shall include all such rock oil, Rangoon oil, Burmah oil, any product of them, and any oil made from petroleum, coal, schist, shale, peat, or other bituminous substance, and any product of them, as gives off an inflammable vapour at a temperature of less than 100 degrees of Fahrenheit's thermometer.

The regulation as to storage was altered: none to be kept for other than private use within 50 yards of a dwelling-house, etc., without a licence. In case of sale of petroleum giving off inflammable vapour at a temperature of less than 100 degrees Fahrenheit, the vessel containing it to be specially labelled. A mode of test is given in the schedule to the Act. Inspectors of weights and measures may test petroleum.

In 1872 was passed the 34 & 35 Vict. c. 105—*An Act for the safe-keeping of Petroleum and other substances of a like nature.* This is a consolidating Act, with some new provisions. The definition brings within the operation of the Act petroleum products which give off inflammable vapours at less than 100 degrees, under certain tests set forth in the schedule to the Act.

The principal sources of true petroleum are the oil-wells of Pennsylvania and Canada. The crude oil is pumped out of the ground in a natural state, and consists of a mixture, in variable proportions, of several different inflammable liquids, which vary widely in their degree of volatility. Some give off a highly inflammable vapour at temperatures far below 100 deg. Fahr., while others require considerable heating before they will give oft any inflammable vapour. The crude oil always gives off a highly inflammable vapour at low temperatures, but it is usually refined before it comes to this country. In the natural state it contains a large amount of inflammable gas in solution; and when heat is applied, this gas comes off with great rapidity. Hence considerable care has to be taken during the process of refining. After the gas has bubbled over, the more volatile liquid products follow, and constitute what is called "petroleum spirit," or "naphtha," or "mineral turpentine." Lastly, the portion which is used for burning in lamps is distilled over, and is subsequently treated chemically, so as to remove all offensive smell, and then rectified.

The principal commercial use of this refined rock oil is for illuminating purposes, and it ought not to be sold for this use in ordinary lamps if it possesses the power of giving off an inflammable vapour at a lower temperature than 100 deg. Fahr. But, as different samples of rectified oil begin to give off inflammable vapour at different temperatures, a "flashing test" has been appended to the Act of 1871 for the purpose of determining the point at which this inflammable vapour begins to come off. It is contended that petroleum, properly so called, in its refined and rectified condition, constitutes one of the safest, cheapest, and most efficient of our illuminating agents.

Unfortunately, however, the term "petroleum" differs in its meaning according to the circumstances under which it is used. Legally, it includes coal oil and other mineral oils, as well as rock oil. Commercially, it is generally used solely in the sense of rock oil. When certain descriptions of coal and bituminous shale are subjected to distillation, they give off a large quantity of an oily liquid, which, when condensed and subjected to a process of purification very similar to that applied to rock oil, furnishes a fluid largely used for illuminating purposes. Its commercial designation is "paraffin." As in the case of rock oil, the earlier products of distillation are light and comparatively volatile oils. One of the latter goes by the name of benzol. It is largely manufactured during one of the stages in the preparation of aniline, the basis of the beautiful coal-tar dyes. It is also sold under the name of benzine, for removing grease stains from silk and woollen goods. Benzoline is of the same family, but the name is applied indiscriminately to either petroleum or coal-tar products. It happens to be one of the most inflammable liquids derived from petroleum or coal-tar oil, as it gives off a vapour at about 50 deg. Fahr., which readily inflames on the approach of a light.

It is to the use of some of the lower class oils that so many fire and other casualties may be traced. [MINERAL OILS.]

EXPLOSIVES.—A general title applied to dualin, dynamite, glyoxiline, gun-cotton, gunpowder, lythofracteur, nitro-glycerine, vigorite, etc.

EXPORTS (from the Latin *exporto*, I carry out).—The commodities manufactured at home for the purpose of transmission abroad, or exchange against the productions of foreign countries, and shipped for that end, are so designated. The exports are valued at the time of shipment. This was formerly accomplished by a mode known as the "official value"; but in 1851, and since, the method of "declared value" has been in force. The "declared value" is much less than the official value, as may be seen by the returns of 1851 under each method, viz. official value £190,397,810; declared value £74,448,722—or rather less than two-fifths of the former. The exports and imports, plus the value of British shipping employed therein, together with the freights, and the value of coasting vessels, may be regarded as the measure of the amount of marine ins. effected in connexion with British commerce annually. See IMPORTS AND EXPORTS.

EXPOSED TO RISK.—This is a technical term, implying the aggregate amount or number of insurances in force. It may apply to the whole bus. of a co., or to one class, or any one locality. Thus a fire co. having 100 insurances of £1000 each in any given town, has £100,000 exposed to risk in that town. An accident co. having 10 persons insured for £1000 each in any one train, or ship, has £10,000 exposed to risk in the event of any casualty. In the case of a life office the amount exposed to risk *in any one year* is the aggregate of the sums insured, payable in the event of death during that year; and the number of lives exposed to risk is the number of lives so ins. But when we speak of the number of lives exposed to risk over a series of years, as 1000 lives insured for 5 years, and all surviving, it is said there were 50,000 lives exposed to risk—1 individual insured for 5 years being regarded as 5 persons ins. 1 year. The want of knowledge on this point has led to some very curious mistakes on several occasions.

EXPOSING.—To expose in a public thoroughfare a person infected with a contagious disease is a common nuisance, and punishable accordingly.

EXPOSURE.—Among the risk of occupations in regard to health has been taken into account the question of exposure to the influence of cold and moisture, and to sudden changes of any kind: hence the divisions of outdoor and indoor employments; and outdoor heavy labour or light labour; and indoor ditto.

Mr. Mann, in his *Medical Statistics of Life Assu.* 1865, speaking of the agencies which interfere with the functions of the skin, gives, as of one class, "occupations necessarily involving much *exposure to cold and moisture combined*—as the occupations of pilots, boatmen, wharfingers [? lightermen]." He adds, "Of late it has been customary to allow pilots to ins. without any add. surcharge; but my strong impression is, that the experience . . . is unfavourable to the continuance of that practice." [OCCUPATIONS.]

EXPOSURES.—Anything which increases the chances of loss or damage by fire, or by reason of fire, is termed in the U.S. "an Exposure." So that in estimating the value of a fire risk, the matter of exposure—*internal* or *external*—becomes of importance; and must have proper attention in fixing the rate.

"Internal exposures" arise chiefly from the nature of the occupancy. Wood-working estab., where shavings are made in quantities, especially of soft wood, have much more serious internal exposures than ordinary manufacturing estab., as cotton or woollen-mills, or hard-wood work-shops; while wadding and batting, or flax-mills, are much more dangerous than cotton or woollen-mills. A manufacturing risk of any kind offers more material for fires than non-hazardous occupations, and is rated accordingly.

"External exposure" is to be considered with regard to the class and occupation of adjoining buildings, and of the building insured; the character of the division walls; the distance of the exposure, etc. In the case of two buildings, one of the 1st and the other of the 4th class, threatened by the same exposure, the increase of hazard to the 4th class building is much greater in proportion than it is to the first; in other words, the lower the class of building, the greater the risk arising from the same causes, and, of course, the greater should be the prem. These considerations must be further qualified by local circumstances attending each case.—*Griswold.*

So important is this question of exposure regarded in the U.S. that the F. pol. usually contains some such condition as the following:

> Or if the risk be increased by the erection or occupation of neighbouring buildings, or by any means whatever within the control of the assured, without the assent of this Co. indorsed hereon, ... this ins. shall be void.

Under this condition the insured is bound to give notice of any add. exposures that may arise from neighbouring buildings during the currency of the pol. Where there are so many buildings built of wood, the importance of this condition is apparent. It has been held that the erection of a barn [*i.e.* stables, coach-house, etc.] in close proximity to the dwelling-house will avoid the ins.

"Special hazards" affect the "exposure" risk of all other properties within from 150 to 300 feet of them—varying with the occupancy.

EXPRESS.—That which is not left to implication.

EXPRESS CONDITIONS.—Conditions actually expressed in a pol. or other contract, as distinguished from those merely implied; special conditions adapted to the circumstances of the case.

EXPRESS CONTRACT.—Expressed in a formal manner by writing or otherwise, as distinguished from an implied contract.

By express contract, parties may undoubtedly place a representation upon the same footing as a warranty; and *vice versa*, they may, by agreement, give to a warranty in the pol. only the effect of a representation.—*Angel; Arnould.* [REPRESENTATIONS.] [WARRANTIES.]

EXPRESS WARRANTY.—An "Express Warranty" is a condition specified in writing upon the face of the pol., the literal fulfilment of which is essential to the validity of the contract.

In *Marine* Ins. the stipulations relating to the conduct of the adventure introduced for the benefit of the underwriter are commonly called express warranties. It is not necessary that the actual word "warranted" should be used in order to constitute a warranty. Thus the words "in port," or "all well," on a certain day, or any other declaration, possess as much force without the word "warranted" prefixed, as with it. Indeed, in some instances, even an express declaration is not essential, but a mere written description will constitute a warranty: as in the case of vessel described in the pol. as an "American ship," it has been ruled that this expression was equivalent to an express declaration that the nationality of the ship was American.—*Arnould; McArthur.* [IMPLIED WARRANTY.] [REPRESENTATIONS.] [WARRANTY.]

EXPRESSION.—In Physiology, the outward signs that make known internal feeling; especially the appearance of the countenance. Mr. Mann, in his *Medical Statistics of Life Assu.* 1865, speaking of "complexion" and "expression" as blended in the countenance, says, although these may be studied separately, in their practical application the two studies are generally joined. Both together form one of the most important combinations of the painter. They should be equally studied by the physician; "for not less important are the relations of the complexion and expression of the countenance to those different conditions of life and health, the prompt recognition of which constitutes a chief excellence of his art." This is amplified as follows:

> The pale greenish, and sometimes leaden complexion of chlorosis, anæmia, or visceral disease; the sallow pallor of cirrhosis, and the semi-jaundiced tint of malignant disease; are all so strongly marked that it is impossible that they should escape notice: but the lighter shades, that cannot be accurately described in words, are those which it is most important for the medical examiner to recognize and appreciate. He may not always know what they mean, but he is morally certain they mark some deviation from health, of which he will endeavour to discover the source, in order to estimate what degree of importance should be assigned to it. It is therefore easy to see how much greater is the advantage possessed by the medical examiner, when this part of the investigation can be conducted, not only in the day-time, but also in a good light, in a good position, with the face of the person under examination turned towards the window. It is by attention to these apparently little things that the art of diagnosis is carried to its highest perfection. It is the putting together a number of small points of circumstantial evidence, unknown to the tyro, unremembered by the man of routine, but ever present to the mind and memory of the thoughtful and experienced, that marks the discriminating and specific difference between a Brodie and a bungler.

EXPROMISSION.—A species of novation, as a creditor's acceptance of a new debtor, who takes the place of the old debtor, who is discharged—*Wharton.*

EXPROMISSOR.—A term employed in the Civil Law, signifying a *surety; bail.*

EXPROPRIATION.—The surrender of a claim to exclusive property.

EXPURGATION.—The act of purging; cleansing; correcting; or freeing from error.

EXTENSION OF INS. BUSINESS.—After what has been said under EXPENSES OF MANAGEMENT, it may at first sight seem unnecessary to dwell at any length upon the extension of life bus.; but really this is not so. The point there discussed is the cost at which all such extension has heretofore been conducted, and the argument deduced in consequence is *that the cost of the extension renders the process unprofitable to those most concerned, viz. the insured; and that therefore, in the interests of pol.-holders, extension (at such cost) is undesirable.* No one has ever said or implied that the extension of L. bus. is not desirable, either in its social or its economic aspect. The problem still remains, then, how can the great mass of the people be educated up to the point of looking upon L. Ins. as a necessity, so that they will seek it of their own free will, and not by the expensive machinery heretofore employed?

For this purpose the only two weapons known are the pen and the tongue; teaching and preaching are the only effective means yet devised. The general spread of education should aid in rendering the work more easy.

It would be easy to quote a hundred authorities on this point; but it is unnecessary. We all understand what is to be done. We commend to our readers the following. Mr. John Finlaison said before the Select Parl. Committee on Ins. Asso. 1853:

> The extent to which it [Life Ins.] has been carried is very great, but it is still open to vast extension; and I know of no means by which that could be done so effectually as by *giving confidence to the public in the stability of the institutions* (657).

Mr. W. H. Porter, B.A., in his pamph. on Life Assu. pub. 1860, puts the other aspect of the case very clearly:

> It is true that there is ample scope for the legitimate extension of life assu., but probably before the range can be much extended a more intimate knowledge of the advantages it is capable of affording must be extensively promulgated, and an acquaintance with the true principles, as previously remarked, on which the science of life assu. depends, is essentially requisite, before we can hope, by informing the minds of the public on the subject, to lead them to take a more healthy view of the question,—to teach them in fact how far the expectations that may be held out to them may fairly be expected to be realized, and how far they are likely to prove fallacious—and then, after well manuring the soil, assu. cos. may hope to reap a prolific return for the labour they have expended upon its cultivation.

Regarding other branches of the bus., they stand upon a somewhat different footing; and their adoption is stimulated by the element of self-interest, and self-protection, in a more direct form than arises in life ins. regarded in its best light—as a provision for families.

EXTENSOR Muscles (from the Latin *extendo*, I stretch out).—As opposed to *flexor muscles*, those which extend any limb or part; the muscle in the fore-arm which extends the joints of the fingers, called the *extensor digitorum*, is an instance.

EXTENT of Interest.—In such branches of Ins. as are founded upon the principle of indemnity, the extent of a pol.-holder's interest in the thing insured must naturally arise more or less frequently. But as many considerations are sometimes involved herein, it will be more convenient to discuss the whole question under Insurable Interest.

EXTERNAL Hazard.—A term used in F. Ins. to signify a danger from outward exposure, by adjoining or neighbouring buildings, or otherwise. [Exposures.]

EXTERNAL Protection (Fire).—Captain Shaw, in his *Fire Surveys*, 1872, says: The safety of a building consists, among other matters, to a great extent on the means which may be at hand for suppressing a fire immediately on its occurrence, not only within the premises, but also in the vicinity; and consequently an inspection or survey, to be complete, should invariably extend to all the surroundings for the purpose of ascertaining the external means of protection. In towns the ostensible means can easily be ascertained; but these should in no case be absolutely relied on until the person making the inspection has ascertained for himself that they are as they are represented to be; as it is a certain fact, however much it may be surprised at or regretted, that there are many cities in the world, and still more towns, which, though they pay some attention to their fire appliances, and incur some expenditure upon them, are nevertheless practically without means of protection: owing in most cases to an utter absence of organization, and in many to an absence of a proper controlling head, capable of taking the lead and directing others in an emergency. . . . Again, there are instances in which buildings are well constructed, not improperly loaded, and in the immediate neighbourhood of powerful aid from without, and yet these buildings are liable to be destroyed by any fire, however small, at the commencement, owing to the inaccessibility of the premises, either in consequence of the approaches being too narrow, or altogether obstructed.

EXTINCTEUR.—See Fire Annihilators.

EXTINCTION of Premiums (Life).—Most life offices will allow the profits on parti. pol. to be applied to the extinguishment of the future prems., by gradual process of reduction: that is, the cash value of each bonus (dividend) may be applied to the purchase of an annu., to be appropriated to the extinction of all future prems.—with, of course, the advantage that when all prems. are extinguished, there will then be a sum of cash available in respect of the pol. at each subsequent division. But the process of extinction must naturally extend over many years.

In some of the mut. offices, as the *Metropolitan*, *London Life*, etc., the bonus can only be applied to a reduction, and not the final extinction of the prems.—that is to say, the bonus at any one division of surplus may be applied to the reduction of prem. up to the term of the next appropriation of surplus, but not beyond. In the case of old lives it may indeed happen that this plan may secure an extinction of prem. during any one term; but there can be no security that the same rate of reduction will attend the next allocation of surplus.

In view apparently of meeting this difficulty, another mode has been devised; and it is this, that the surplus shall be applied to the extinguishment of the prems. at the extreme end of the contract, *i.e.* at the extremity of age of the life insured, working towards the present age of the insured at each subsequent division: until at last, if the life survive, it must run into the freed age, when no more prems. are payable. If the pol. be then payable,—which does not necessarily follow,—it then comes under the category of Life-time Pol.; where the details of the method will be further discussed.

The first mention we meet with of the power so to apply the surplus is in the Special Act of the *Clerical, Medical and Gen.* Life,—the 13 Vict. c. ix. s. xxxiv. (1850),—"And be it enacted, that upon the division of profits in the year 1857, and ever thereafter, it shall be lawful for the board of directors of the So., at the request of the person entitled to any parti. pol., . . . to apply the then present value of such bonus in the *limitation of the number of the future prems. payable on such pol.*, upon such terms and in such manner as may be agreed upon by such person and the board of directors of the So."

The *Briton* Life, founded 1853, made this mode of appropriation of profits a "special feature"; and we have given an outline of its intended mode of working in our history of that Co. [Lifetime Pol.]

EXTINGUISHMENT.—In Law, the annihilation of a collateral interest, or the supersedure of one interest by another and greater interest, thing, or subject in that out of which it is derived. It is of various natures as applied to various rights.

EXTINGUISHMENT of Fires.—See Fires, Extinguishment of.

EXTINGUISHMENT of Interest (Life Ins.).—So long as the contract of life ins. was regarded as a contract of indemnity, the question of the extinguishment of interest—as, for instance, a debtor, whose life was insured, paying off the debt against which the pol. had been effected—was regarded as fatal to any claim under a life pol. kept in force afterwards upon the same life. But the law in this respect has been changed. The whole question will be discussed under Insurable Interest. In most other branches of ins. bus. the extinction, *i.e.* termination of interest, determines the ins. contract. [Alienation.]

EXTON, JOHN, LL.D., Judge of the Admiralty, pub. in 1664: *Maritime Dicæologie; or Sea Jurisdiction of England, in three books.* I. *Setting forth the Antiquity of the Admiralty in England.* II. *Proving the Ports, Havens, and Creeks of the Sea to be within the Jurisdiction of the Admiralty.* III. *Showing that all Contracts concerning Maritime Affairs are within the Jurisdiction of the Admiralty, and there Cognizable. To which is added* [in 2nd. ed. 1746], *A Remarkable Case in K.B. concerning the Jurisdiction of the Admiralty-Coroner.* 3rd. ed. 1755. [MARINE INS.] [SEA, JURISDICTION OF THE.]

EXTRAJUDICIAL.—Out of the regular course of legal procedure. An extrajudicial dictum signifies an incidental opinion not necessary to the judgment of the matter before the Court.

EXTRAMURAL.—As distinguished from Intramural, or burying outside the walls or boundaries of the city.

EXTRAPAROCHIAL.—Out of any given parish. As when a union workhouse, hospital, or other public inst., situate in one parish receives inmates from other parishes. A portion of its deaths are returned as *extraparochial.*

EXTRA PREMIUMS.—The subject of extra premiums presents itself in almost every branch of Ins. bus.; and this is unavoidable: for in practice it is impossible to frame T. of rates for all the circumstances that may arise. Besides, the assessment of extra rates is most frequently rendered necessary by the occurrence of exceptional circumstances, which were not foreseen or contemplated when the orig. contract was entered upon. It will be convenient to notice the several branches of bus. in this relation, under their alphabetical heads; but it is in L. Ins. practice that the interest of the subject usually centres.

Accident Ins.—The classification of risks being in the ordinary way extended to some three or four heads, according to the occupation of the person proposing to be insured, the necessity for assessing extra prems. does not so frequently arise as must be the case if there were only one class, and all the special risks had to be regarded from the standpoint of that one class. Still extra prems. have to be demanded in cases where the lives insured are under, say, 18 years of age, or over 60; also for loss of limb, hernia, defective sight, or any tendency to deafness; also where there has been any tendency to fits, or apoplexy, however remote; or any predisposition to gout, rheumatism, or stiffness of the joints.

Cattle Ins.—Extra prems. in regard to Cattle Ins. may arise in several forms, as where the value sought to be insured is beyond the ordinary value, and has reference to breed, etc.; also in counties and districts adjacent to those which are or have been affected with disease; and, again, in regard to the risk of being shown at exhibitions, etc.

Fire Ins.—In Fire Ins. also, there being several classes, as ordinary, hazardous, doubly-hazardous, special, etc., the necessity for charging extra prems. does not arise so frequently as would otherwise be the case. Besides, the practice of late years has become more and more general to inspect all risks offered, and determine a rate having regard to the precise nature of the risk, and not by way of extra prem. on some imaginary classification which has no actual relation to the risk under consideration. Still, the necessity for extra rating does arise, as where stoves and flues are added, not sufficiently protected; or where the limit for works of art is increased beyond the ordinary limit; or where any portion of the premises, or of the adjoining premises, becomes occupied for callings more dangerous than was contemplated at the time of the orig. ins. Also in regard to certain processes of manufacture. The tariff regulations of the F. offices, or of the National Board, prescribe *minimum* rates only. It was the practice of the early offices to charge an extra prem. for all pol. insuring beyond a certain amount. [FIRE INS., CLASSIFICATION OF RISKS.]

Glass Ins.—The rate upon plate and other glass varies in the first instance with occupation, etc.; and hence on change of occupation of premises for a more dangerous trade, in relation to the risk of Glass Ins., an extra prem. has to be charged. So an extra rate is charged when embossed or figured glass is substituted for plain glass; as also where bent plates are substituted for flat ones, etc., etc.

Life Ins.—It is more particularly in relation to this branch of Ins. that extra prems. are more usually discussed, and here they arise usually in one of three connexions:—1. In regard to the character of the life being below the ordinary standard, as already discussed under DISEASED AND IMPAIRED LIVES. 2. In respect of licence to travel or reside beyond the ordinary limits prescribed by the pol. This last we shall consider in detail under FOREIGN RESIDENCE AND TRAVEL, LIMITS OF. It has been referred to under EMIGRATION INS. 3. In regard to exposure to danger from some external cause, as MILITARY, or NAVAL SERVICE, or other risk of OCCUPATION. These latter risks will be discussed under the respective heads here indicated.

Among the *ordinary* causes for extra prems. are GOUT and HERNIA, while formerly non-vaccination was also a ground for extra rate. [SMALLPOX.] The *special* causes are various, such as tendency to PULMONARY CONSUMPTION, or other diseases, more or less marked; bad or doubtful FAMILY HIST.; past habits of INTEMPERANCE; tendency to premature OBESITY, etc., etc. For several of these causes, more especially gout and hernia, there is almost a recognized tariff. In the case of young married females there is the charge for risk of CHILDBIRTH, usually 10*s*. p. £100 insured, sometimes more for first child. [FEMALE LIFE.]

In regard to foreign travel and residence, an enlightened policy has removed many restrictions; and it is now only professed to charge extra prems. for climates really detrimental to health. [FOREIGN RESIDENCE AND TRAVEL.]

In regard to risk of occupation, the practice of offices has been by no means uniform. Beerhouse-keepers, butchers, innkeepers, military and naval officers, and all seafaring men, have been made the subject of extra prems., varying, however, with different offices.

An early prosp. of the *British Empire* Mut. (1847) dealt with the subject of extra prems. in regard to diseased and impaired lives as follows:

> Much misapprehension prevails regarding the health requisite for Life Assu. on the ordinary and advertised terms. The T. being constructed on the assumption that all the persons proposing to assure are both personally and relatively healthy, it must be obvious that the skill of the actuary in constructing the T. of prems. to be paid at given ages, must be supplemented by the valuable and important services of the medical officer, whose duty it is, after a careful examination of the individual proposed for assurance, to determine—1. Whether the person proposed is in robust health, or at least equal to the average of others who are admitted at the T. rates. 2. Whether there is any evidence in the hist. of his family which indicates that there is or has been any constitutional disease, which *may* at a future time be developed in the person under examination. 3. If the case is one in which disease exists, though in a very modified form, or that the family hist. renders it *prob.* that he will not escape from the influence of some family taint, it becomes the duty of the medical examiner to state the extent to which the life is, in his estimation, deteriorated, and the increase of prem. that will cover the extra risk.
>
> Though it must be obvious to all persons looking at the subject theoretically, that it is equitable to the other members of the Co., that on the admission of diseased or damaged lives, these additional charges should be made, yet, practically, when this principle is applied, the proposers who are thus surcharged (especially those surcharged on the ground of family hist.) frequently consider themselves aggrieved. Conscious that they are at the time in good health, they cannot realize as a fact that their lives are more than ordinarily hazardous, and they therefore are unwilling to pay extra premium for that which *may or may not occur* in their cases.
>
> To meet the objections of such proposers, the board of directors have decided, that in surcharged cases, should the proposer object to pay an advanced rate of prem., he shall have the option of being assured AT ORDINARY RATES, on one of the following plans:—
>
> 1. The extra rate which he would have to pay under the old system shall be commuted to a fixed sum, to be deducted from the amount assured should the pol. become a claim within a given number of years. Or,
>
> 2. In place of the extra rate, the pol. shall be subject to a graduated charge, diminishing year by year, until the pol. is altogether disencumbered.
>
> By either of these modes the proposer will secure to his representatives the full benefit of his pol. without any extra payment, unless he die prematurely. In short, the life will only be treated as an invalid one should experience prove that it was actually defective.

This is really an adaptation of Black's plan, already set forth in our art. DISEASED AND IMPAIRED LIVES. Some illustrations of its working are given:

> A man, aged 30, if surcharged 5 years (thus estimating him in constitution to be 35 years of age), would, upon the method long in use, be required to pay a prem. of £2 15*s.* 4*d.* p.c. during the whole of his life, instead of £2 8*s.* 3*d.*, the ordinary prem. 1. If he adopted the mode proposed (No. 1), he would pay only the ordinary rate of prem., £2 8*s.* 3*d.*; but if the pol. become a claim within 34 years, the fixed sum of £11 would be deducted from the amount of assu. 2. If he selected the plan proposed (No. 2), he would pay only the ordinary rate of prem.; but there would be a graduated charge upon the pol. The amount deducted, if the claim occurred in the first year, would be £21 5*s.* 0*d.*; in the second, £20 12*s.* 6*d.*; and so decreasing 12*s.* 6*d.* p. year; and the amount would be wholly extinguished in 34 years. The pol. would then continue in force for the full amount, subject only to the ordinary rate of prem.

About 1853 the Council of the Inst. of Act. took steps to collect from the then existing life offices the data of their experience regarding extra risks, in view, if possible, of some uniformity of practice. The results will be spoken of under date 1857 in this art.

In vol. vii. of *Assu. Mag.* (1857), is contained a paper by Mr. Charles Jellicoe: *On the Data collected by the Council of the Inst. with a view to determine the rates of prem. for the assu. of the lives of persons residing in foreign climates, or engaged in pursuits attended with extra risk.* The author says:

> It will no doubt be in the recollection of many of our readers that some few years ago attempts were made by the Council of the Inst. to collect, from the offices willing to contribute the results of their experience, such information connected with the extra risks undertaken by them as might afford the means of determining, if not exactly, at least with some approach to accuracy, the proper rates of prem. to meet them.
>
> The Council made application to all existing cos.; but did not succeed, unfortunately, in obtaining returns from more than 52 of them. These 52 cos., however, were at the pains to supply as many as 6154 cases—each of them of a special nature, as regarded unusual hazard to life arising from residence in foreign climates, or from particular pursuits; but so infinitely varied in their conditions and circumstances were they, that it became immediately obvious that considerable difficulty would arise as to grouping them into classes which should be sufficiently well defined to yield results of a useful and practical character. If, on the one hand, the conditions of risk were kept within limits sufficiently restricted, the numbers in each class were all but insignificant; and if, on the other hand, attempts were made to remedy this last inconvenience, the groups comprised risks which were altogether heterogeneous.

However, after much careful consideration, and many attempts at classification, "attended with an amount of labour of which those only who are familiar with such investigations can form an adequate idea," it was finally determined to adopt the double classification of "Residence" and "Employments," each of these being again subdivided into two or more classes. This work was carried out by, or under the superintendence of Mr. Edward Cheshire, the then Sec. of the Inst. of Act.

We shall here limit ourselves to the results of the classification of employments only—the question of residence will be discussed under FOREIGN RESIDENCE AND TRAVEL, under its alphabetical head.

The employments consisted of (5) marine risks: comprising the Royal, the Indian, and the mercantile navy serving in all parts of the world, and embracing the employment of yachting—in which class there were 659 obs.; and (6) military risks: comprising military service, in whatever character, of which there were 563 cases under obs. It was considered that the numbers in each class were insufficient to afford a satisfactory solution of the questions at issue. Classes 5 and 6, now under notice, were therefore combined, and the annexed T. of the ann. mort. p.c. in quinquennial groups was deduced:

Age.	T. V. & VI. Combined.
26 to 30	1·5889
31 „ 35	2·5014
36 „ 40	2·7344
41 „ 45	3·0423
46 „ 50	3·7958
51 „ 55	3·3455
56 „ 60	4·7813
61 „ 65	5·2402

In vol. xiv. of *Assu. Mag.* (1868) is a well-reasoned paper by Mr. W. M. Makeham: *On the adjustment of prems. for L. Assu. in reference to extra risks*; wherein he reviews the present practice, and offers suggestions for improvements. He says: "The practice of providing for the extra risk by a constant add. to the prem. irrespective of the age, is evidently a sort of rule-of-thumb way of giving effect to the notion that the extra risk acts with equal effect at all ages." From this he leads up to another point of practice, whereon he remarks:

> It is not surprising that the practice of charging a constant extra prem. for all ages and for all kinds of assu. should have been accompanied by the corresponding primitive one of simply discontinuing it when the extra risk had ceased. This, I imagine, has led to the curious, but very general practice which still obtains in Indian offices [*i.e.* British offices accepting lives resident in India], whose rates are now, and have long been, computed by Mort. T. formed exclusively upon obs. made in India, viz. to fix the European rate, *not by a calculation based upon the actual age at the time of arrival in Europe, but according to the European risk for the age at which the assu. was effected.* A practice so utterly void of any rational foundation could only have originated in the very infancy of the science of actuarial computation; and it is little to the credit of the profession that it should have maintained its ground to the present day.

His proposed remedy we shall have occasion to discuss under FOREIGN RESIDENCE AND TRAVEL. He continues the subject in the same vol. p. 242; and we shall also deal with it under the last-named head.

In our art. on EXPERIENCE T. No. 2, we have shown that one of the four main divisions into which the data was classed was "Lives exposed to extra risks from climate, occupation, etc." The total returns in this class embraced 2433 lives, male and female, who had passed through an aggregate of 16,503 years of life. Of these lives 409 had died, 1480 had discontinued, and 544 were existing on 31st Dec. 1863. The Report of the Committee superintending the investigation, pub. 1869, gave the following tabular return of the results,—viz. of the number exposed to risk, and the number who died in each year; but we do not see that any deductions of value can be obtained therefrom.

Number Exposed to Risk and Number who Died at each Age.

Age.	Exposed to risk.	Died.	Age.	Exposed to risk.	Died.	Age.	Exposed to risk.	Died.	Age.	Exposed to risk.	Died.
0	...	...	21	122	...	41	467	11	61	108·5	6
1	...	...	22	164·5	2	42	449	4	62	97	3
2	...	...	23	211·5	6	43	444	11	63	86·5	4
3	...	...	24	241·5	15	44	419·5	4	64	76·5	5
4	...	...	25	273	5	45	402	10	65	69	3
5	...	...	26	317	6	46	384·5	13	66	62·5	3
6	...	..	27	352·5	8	47	365·5	14	67	55	3
7	...	...	28	378·5	5	48	345	6	68	49	6
8	·5	...	29	404·5	18	49	331	12	69	40	3
9	1·5	...	30	415	9	50	305	9	70	32·5	2
10	2·5	...	31	425	6	51	280·5	9	71	25	1
11	4	...	32	441	7	52	261·5	10	72	23	2
12	5	...	33	457	13	53	239	11	73	21	4
13	5·5	...	34	465·5	7	54	221	10	74	16	3
14	7	...	35	496	18	55	201	5	75	10	...
15	13·5	...	36	495	10	56	181·5	5	76	12	1
16	24·5	1	37	485·5	13	57	167	9	77	8	2
17	35·5	...	38	475	15	58	151	6	78	5	1
18	51·5	1	39	455·5	6	59	141	7	79	4	1
19	75	1	40	459·5	8	60	127·5	9	80	2	1
20	99·5	...									

The 6th schedule of the Life Assu. Cos. Act, 1870, requires: "separate statements to be furnished for bus. at other than European rates, together with a statement of the manner in which pol. on unhealthy lives are dealt with." We have noticed the returns already made in conformity with this requirement under DISEASED LIVES, INS. OF; POINTS IN PRACTICE.

In vol. xvii. of the *Assu. Mag.* 1872, is contained a paper by Mr. James R. Macfadyen:

On "*Extra Premium*." The mode of treatment adopted is very much in the shape of a criticism more or less scientific on the methods then employed in determining extra rates of prem.; and as such is not easy to follow. The writer opens by saying:

> A paper on extra prem. may treat of the subject in one or other of two ways. It may be, on the one hand, an attempt to deduce T. of Mort. for the various classes of under-average risks occurring in a life office's transactions. Or, on the other hand, this part of the subject may be ignored, and the paper be simply an inquiry into the effects resulting from the various methods employed in charging extra—an analysis of the actuarial points raised in consequence of a So. admitting not merely minimum risk lives, but others not eligible on similar terms. In short, the subject of extra prem. may be considered either in respect to the amount to be imposed, or in regard to the manner and effect of its imposition. The first question must be determined mainly by actual mort. obs.—the second does not require in the same degree, for its examination, the light of experience. It is this latter question which I have taken up in the following paper; but as both branches of the subject are intimately connected, it may be well to make a few general remarks on the former also.
>
> Inasmuch as the circumstances on which the rates of extra prem. depend are infinitely varied, we can never have T. so complete as to be able to relegate every case that may arise in practice to a set of rates founded on obs. of life in exactly similar circumstances. We can thus only administer a sort of rough justice—carry out the cardinal principle of life assu.—that the many must bear the burdens of the one, and place every life that is insurable at all under such prem. scale as shall most nearly represent its condition. In fact, the same thing is done in cases taken as minimum risks, and is the very essence of Life Ins. The whole question then is, where shall the line be drawn? How many T. of Mort. shall be used? Were the selection of the assured against the office done away with, one might suffice; and according to the force of this selection, will be the number of varying prem. rates required. Anything tending to diminish this force will tend to simplify the classification of assured lives.

He offers the following illustration in support:

> It is at present the practice in many offices to allow their pol.-holders free residence in any part of the world, provided the privilege be not exercised during a probationary period; this stipulation, together with a sufficiently broad foundation of general mort. being considered adequate to check the force of selection against the so. Similarly, any method acting as governor or regulator to the flow of assurances to an office will obviate the necessity of a great variety of life prems. whether for disease or for climate; and will thus narrow the field of requisite inquiry as to the rates to be charged in under-average cases. . . .

He then passes to the second branch of his subject—the actuarial results of the various methods now in use for charging extra prem.; and to this he devotes the remainder of the paper. Hereon he says:

> Circumstances having an unfavourable tendency on the duration of human life may be divided into two great classes—the one containing those cases in which the age of the person affected has a more important bearing on the prejudicial circumstances, and the other those cases in which less weight is attached to the time of life. I use the words "more" and "less" advisedly, because, whatever be the nature of the circumstance, the age must have some weight; but there are obviously certain kinds of risks in which this is more important than in others. Following the usual mode of classification—in the former section we see cases of consumptive taint or tendency, rheumatic fever, and almost all the diseases, and also what may be called the "special circumstance" extras; in the latter, climate and occupation risks, and a few maladies, such as hernia and gout, find a place.

He then proceeds to analyze the practice now pursued. He denounces the "rating-up" method, and says:

> The only defensible method of treating such assu. is to have a variety of complete sets of prem. rates, to one or other of which, according to the intensity of the health-affecting circumstances, the medical adviser of the co. can relegate each case that arises. These sets, as I have said in a former part of this paper, need not be numerous; just enough to prevent selection against the office to a dangerous extent will suffice. Let us, if we may, form these rates from the experience of the principal classes of extras, but empirically if we must. In saying this, I am, of course, looking at the question not so much in regard to sufficiency of prem., as to consistency. . . .

He next enters upon an examination of "the second form in which extra prem. occurs, viz. a fixed amount of add. quite irrespective of age;" and here he not only examines and criticizes Mr. Makeham's paper already quoted, but proceeds to furnish an expansion of that method. Finally, he considers the modes pursued by some offices distinct from those already touched upon. His conclusions are not very explicit, but the paper is still very instructive.

In practice there are two points which greatly need to be finally agreed upon. 1. The mode in which all extra prem. pol. shall be valued, *i.e.* whether at the actual age, thereby leaving the extra prem. to meet the current risk of each year, or period? Or, at the "rated-up" age, which leads to many anomalies in valuation. 2. What shall be done in the case of lives who, having paid the climate risk, return with impaired constitutions, but claim under their contracts to be put back to the rates for healthy lives at the age at which they insured—leaving the office to run the risk of an enfeebled constitution for which they thus receive no adequate payment?

Regarding the legal incidents of extra prems. in life ins., there are two cases in the books, each possessing some interest.

In the case of *Grey* v. *Ellison* and others, before the English Court of Chancery in 1856, the facts were as follow: Grey, in consideration of £6832 paid to him by the *Globe* Ins. Co. in 1837, granted to them an annu. of £800 for his life, and assigned to them his life interest in large funds to secure the payment thereof. By the same deed he covenanted with the trustees of the Co. that in case they should at any time insure any sum of money not exceeding £6832 upon his life, and should pay any add. prem. or prems. by reason of his going beyond seas, then all such sum or sums of money as should be advanced by them for such add. prem. or prems. might be retained by them out of the property assigned to them in trust. Shortly afterwards the Co., which had two departments—one an ins. department and the other an annu. department—effected a pol. of ins. on the life of Grey in their ins. department, whereby, in consideration of an ann. prem. of £329, the sum of £6832 was ins. to be paid to the trustees of the *Globe* Ins. Co. out of the funds of the Co. on the death of Grey. The ann. prems. were accordingly regularly paid upon this pol. by cheques, signed by 3 of the directors of the *Globe* Ins. Co. on behalf of the Co., the amount of such cheques being paid by the bankers of the Co. on account of the annu. department of the Co. to the credit of the life ins. department thereof. In 1842 Grey went "beyond the seas," and thenceforth the extra prems. for exceeding the ordinary limits of travel were charged, and paid by means of cheques drawn as before stated. The Court *held*, that as against the trust fund assigned by way of security to the Co., the Co. were not entitled to deduct the sums they had paid in respect of the extra rate of prem. This decision was arrived at on the ground, that the transaction purporting to be an ins. as carried out by the Co. was no ins. at all; and hence if there was no ins., there could be no extra prem. In that case it is very difficult to see why the ordinary prems. were allowed to be charged, unless indeed on the ground of custom, which was urged at the hearing. [25 L. J. Equity, 666.]

In the case of *Manby* v. *The Gresham Life*, before the Court of Chancery, 1861, the facts were these: Manby desired to effect a life pol. on the life of Wright, and made a proposal to the *U. K.* Life. In answer to one of the questions, it was stated in the proposal that Wright "formerly was not so steady as he ought to be, but was latterly much more steady and temperate, and that he had a good sound constitution, and was then in excellent health." The Co., however, declined to accept the life, but forwarded the papers to the *Gresham*. That Co. accepted, in 1849, £750 upon the life, at a prem. of £31 11*s.* 3*d.*, being £4 4*s.* 2*d.* p.c., whereas the ordinary prem. for a sound life aged 37 was £2 19*s.* 11*d.* A prosp. of the *Gresham* set forth that in order that the extra rates charged might not be a permanent charge, the lives ins. might at intervals of not less than one year submit themselves for re-examination by the medical officers of the Co.; and if the Co. became satisfied that the orig. cause which led to the demand for extra prem. had been removed, it would thereafter accept the ordinary prem. for the age at which the ins. was effected. In 1852 Wright was re-examined by the medical officer of the *Gresham*, but the result was not favourable to a reduction of prem. In 1853 Wright went to Melbourne. In 1859 he was examined by a physician and surgeon there, both of whom certified that he was healthy and sound in every respect, and that there was nothing to render his life subject to more than ordinary risk. The directors however decided, apparently on the ground of his residence in Australia, that they could not remit the extra prem. A bill was therefore filed, praying for a decree that prem. be reduced, and for repayment of amounts overpaid:—*Held*, that the directors, in regard to this particular contract, were sole judges of the fact; that the Court could not interfere with their discretion; and a demurrer to the bill was allowed.

The *Positive* Life, 1870, announced its intention to abolish "extra prems.," and issue an entirely free pol., without restrictions or limitations of any kind: hence persons insured in that office may travel to or reside in any climate; and may incur military, naval, or sea risks, at the ordinary prems. It is possible that under this scheme the few may have to bear the burthen of the many.

The *National Funds* Ins. Co., in 1872, abolished all extra prems. for officers of every grade in H.M.'s navy or in the mercantile marine. They are ins. at ordinary "home" rates.

Marine Ins.—The extra prems. arise from causes very various—as, for deviation of voyage; change of cargo; delay in sailing, throwing the voyage into more dangerous seasons; blockades, and other hostilities, actual or threatened; and many other incidents which none but the initiated can contemplate.

Steam Boiler Ins.—The extra rates here may arise from altered condition of the boiler, its setting or fittings at subsequent inspections after the original ins.; from change in water supply; or from proximity of other and dangerous boilers.

EXTRA RATE.—See EXTRA PREMIUMS.

EXTRA RISKS.—Risks outside those ordinarily contemplated under ins. contracts. We have considered the question of extra risks in a more or less connected form under EXTRA PREMS.; but the references there given will require to be followed up, in order that the ramifications of the subject may be seen in all its bearings.

EXTRA VIRES.—Beyond their powers.

EXTRACT.—To draw out; to select; to quote a passage from a book, or from a document.

EXTRAORDINARY RESOLUTION.—For the purposes of the Companies Act, 1862, it is declared (section 129), that any resolution shall be deemed to be extraordinary which is passed in such manner as would, if it had been confirmed by a subsequent meeting, have constituted a special resolution. Thus, if a company pass a resolution (at a meeting properly convened for the purpose) to the effect that it has been proved to the satisfaction of the co., *i.e.* of its shareholders at an extraordinary gen. meeting properly convened, that the co. cannot by reason of its liabilities continue its business, and that it is advisable to wind up the same. This is an extraordinary resolution, upon which the co. may be wound up without waiting for any confirmation of a subsequent meeting. Due regard should at the same time be had to the provisions of the D. of Sett. or Special Act of each particular co. It is, however, to be assumed that where a co., however constituted, has registered under this Act, conformity with the above requirement will be sufficient.

EXTRAVASATION.—The passage of fluids out of their proper vessels and their infiltration into the surrounding tissues. The term is nearly synonymous with *effusion*, but is less comprehensive, not including the cases of fluids poured out by secretion, or any of the products of inflammation.—*Hoblyn.*

EXUDATA (from the Latin, *to come out by sweating*).—Exudative diseases; diseases which come out by sweating; a general term for numerous skin diseases. Hence, *exudation*, the flow of liquid from the surface of the skin or membrane, an ulcer, etc. Exudation is distinguished by Bennett into *simple*, *tuberculous*, and *cancerous.*

EYES, THE.—Dr. Adams Allen, in his *Medical Examinations for Life Ins.* 5th ed. 1869, refers to the importance of observing the movements of the eye, its expression, the condition of the pupil, contracted or dilated, or whether these changes are symmetrical; whether there be complete or partial amaurosis of either; the *arcus senilis*, etc. In a word, he says, "It will be found that the eyes can afford vastly more information than merely as to their colour."

EYKLEBOSCH, WM., was Sec. of *Birkbeck* Life in 1854.

EYRES, STEPHEN H., was Sec. of Lond. Board of *Firth Marine* in 1843.

F.

F.A.A.—Free of all average. [FREE OF AVERAGE.]

F.G.A.—Foreign general average. [FOREIGN GENERAL AVERAGE.]

F.I.A.—Fellow of the Institute of Actuaries of Great Britain and Ireland. A.I.A. signifies Associate only.

FABIAN, O. R.—Surveyor and Assessor of Fire Losses to the *Northern* Ins. Co. for England, Ireland, and the Continent of Europe since 1865. He entered the *Globe* in 1857, and passed through the Town and Country Fire Departments. Mr. Fabian had contemplated the compilation of a Dict. of Technical Terms in Ins. Bus., more particularly Fire Ins.; and he offered us his assistance in this respect, but we had advanced too far in our work at that time to be able.to avail ourselves of the aid offered.

FABRIC.—A building; an edifice; a structure; a pile:—

> Why here's a fabric that implies eternity;
> The building plain, but most substantial.—*Middleton.*

Also now applied to soft textures, as silk, and other *fabrics* of the East.

FABRIC LANDS.—Land given to provide for the rebuilding or repair of cathedrals and churches. Anciently it was very customary for persons to give something by their wills to be applied in repairing the fabric of the cathedral or parish church where they lived.

FAÇADE (from the French).—In Architecture, the face or front of any building towards a street, court, garden, or other place, from which a prominent view is obtained.

FACE AGUE.—*Tic-douloureux.* A form of neuralgia which occurs in the nerves of the face.

FACIES HIPPOCRATICA.—The peculiar expression of countenance which indicates the approach of death; it has been accurately described by Hippocrates, whence the above common medical term.—*Brande.*

FACKLER, D. PARKS, Consulting Act. and Accountant, N.Y. He was trained under Mr. Sheppard Homans in the *Mutual*, and is held in corresponding high repute in his profession. In 1870 he pub. *Agents' Monetary Life and Valuation Tables, with valuable explanations.* A most useful practical book. The author says:

> Some people may think, that, as a little knowledge is a dangerous thing, it would be better not to instruct agents on the subjects contained herein—but the wonderful growth of Life Ins. in this country, since it has been explained and popularized by such essays as those of Prof. Wright, seems to prove that, like all good things, it prospers in light rather than in darkness.

Second ed., "enlarged and revised," 1874; wherein is contained the commutation cols. from *Experience* T. No. 1, at 4, 5, and 6 p.c.

FACTITIOUS (from *factito*, to practise).—Made by art. This term is applied (*inter alia*) to *diseases* which are produced wholly or in part by the patient.

FACTO.—In fact; where anything is actually done.

FACTOR.—In Arithmetic and Algebra, the name given to each of the quantities which are multiplied into one another in order to form a product. The factors of a number are its several *divisors* or *measures.* In Mercantile Law, a mercantile agent who is entrusted with possession of the property which he is commissioned to dispose of. In Scotland, the term *factor* is used synonymously with *steward* in England.

FACTOR, INSURABLE INT. OF.—Factors are at law held to have a *lien* not only on the goods consigned to their charge, but also on the proceeds of the goods. They therefore have an insurable int., and may ins. to the extent of the lien, in way of advances, expenses, and commissions.

In *De Forest* v. *Fulton* Fire Ins. Co., before the N.Y. Courts in 1828, it was *held*, that a factor, who has the goods of his principal in his possession, for sale on commission, has an insurable interest in them to the full extent of their value, and may ins. them in his own name, and recover the amount payable for the loss, on an averment of interest in himself. [1 Hall, N.Y. 84.]

In the case of *Waters* v. *Monarch* Ins. Co., before the English Courts, 1856, the insured was described as a "corn and flour factor." The pol. was, amongst other things, on goods in his warehouses, and on "goods in trust or on commission therein." The Co. covenanted to make good "any damage by fire to the property insured." The insured was a wharfinger and warehouseman; he had in his warehouses goods belonging to his customers, which were deposited with him in that capacity, and on which he had a lien for the charges, cartage and warehouse rent, but no further interest of his own. No charge was made to the customers for ins., nor were they informed of the existence of the pol. The warehouse of the insured was consumed by fire, with all the goods in it. The Co. paid the value of the insured's own goods, and the amount of his lien on his customers' goods, but refused to pay the value of the customers' interest in the goods beyond the lien:—*Held*, that the goods of the customers were "in trust" within the meaning of the pol., and that the insured was entitled to recover the entire value. [5 Ellis and Black, Q.B. 870.] See also *Wolff* v. *Horncastle*, and *Goodwin* v. *Lond.* Assu. Corp. [INSURABLE INTEREST.]

FACTORY (from the Latin *factor*, a maker).—The earliest usage of this term was to signify a depôt for goods. In this sense the settlements of the East India Co. were called *factories;* as also the African trading stations. Gradually, however, the word has become applied to estab. in which certain commodities are manufactured, as cotton and woollen stuffs, and hardware generally; which may be termed *Factories Industrial*, as distinguished from *Factories Commercial.*

FACTORY Accidents.—The inspectors appointed under the Factory Acts, which will be spoken of under a distinct head, take note and report upon accidents and injuries to human life resulting from the incidents of factory labour. We have not at hand for reference any compiled returns. In the 6 months ending 31 Oct. 1855, the number of accidents reported by the 4 factory inspectors were 1801, viz. 720 to adults; 912 to young persons; and 169 to children. 21 of these were fatal, and arose from machinery. Many of the accidents arose from non-fencing of horizontal shafts; and these were mostly of a very terrible description, as tearing off limbs, etc.

In the half-year ending April 30, 1873, there were 3640 accidents in the factories of the U.K. There were 162 killed, 154 males and 8 females; 491 were so much hurt that it was necessary to amputate a limb or part of a limb; 390 persons had limbs or bones fractured; there were 257 instances of injury to the head or face, and 2340 lacerations, contusions, or other injuries not enumerated above. No case is included in the list where the sufferer was able to return to work within 48 hours. The number of accidents is much less, in proportion to the number employed, than it was formerly.

FACTORY Acts.—In consequence of the evils to health arising from the former factory system of labour in Gt. Brit.—especially to children of tender years, and to all from protracted hours of labour—Governmental interference became necessary; and various measures have been passed with a view to improvement. The first Factory Act was passed as early as 1802, being the 42 Geo. III. c. 73—*An Act for the preservation of the health and morals of apprentices and others employed in cotton and other mills, and cotton and other factories.* By the 3 & 4 Wm. IV. c. 103 (1833), children under 9 years of age were not to be employed; and persons under 18 were prohibited from working more than 12 hours per day. The list of subsequent Acts is too long to be given here. The supervision should by this time be nearly perfect. In 1867 an Act was passed in relation to women and children employed in manual labour. That great good has resulted from legis. in this direction all well-informed persons must admit.

For some practical considerations on this subject see a paper by Mr. H. W. Porter, B.A., *On some considerations suggested by the Ann. Rep. of the Reg.-Gen., being an inquiry into the question as to how far the mort. in this country exhibited by these Rep. is controllable by Human Agency.—Assu. Mag.* vol. ix. (1860), pp. 20 and 156. [Occupations, Influence of.]

FACTORY, Commercial; *i.e.* Trading Station.—It is important in many respects to know that Europeans residing and trading under the protection of factories, or colonial estab., have the national character of the European mother state to which the estab. belongs, and under whose protection they live and trade; and the reason of this is obvious: Europeans so circumstanced do not become the subjects of the Asiatic or African power in whose dominions such trading estab. is situated. [3 Rob. A.] [Fort.]

FACTORY, Industrial.—Under this designation might be classed nearly all the workshops, sheds, and mills occupied by manufacturing industries throughout the world; and it will be remembered that these all come before the fire underwriter to be assessed in regard to the proper rate of prem. to be paid for protection against fire; while the risks involved in the processes of manufacture to which they are severally devoted become the subject of continuous consideration, in view of new materials employed, and fresh processes brought into operation. [Fire Ins., Classification of Risks.] [Fire Ins. Prems.] Again, the health of the countless thousands employed in the industrial occupations so carried on is materially affected not only by the processes employed, but also by the structure of the buildings, and the regard to, or disregard of, cleanliness, ventilation, situation, drainage, etc. These subjects will be found discussed under their appropriate heads throughout this work. See especially Occupations, Influence of.

In 1856 there were 2046 cotton factories in E. and W., of which no fewer than 1480 were situated in Lancashire. The number has enormously increased since that period. The first so-called fire-proof cotton factory was erected at Belper in 1797, by Messrs. Strutt.

FACTORY Risks.—All fire ins. upon factories partake of the nature of special risks, and are subject to the conditions of the tariff, wherein great elaboration of classification prevails. In the U.S. the National Board is making considerable progress in the collection of statistics regarding factory and other special risks; the subject being under the direct superintendence of Mr. Henry H. Hall, the Chairman of the Committee on Statistics. It will be remembered that the moral hazard in regard to individual risks of this class defies all classification. [Fire Ins. Risks, Classification of.] [Fire Prevention, *Building Acts.*]

FACULTY (*facultas*, from *facere*, to make).—The power or ability by which an action is performed. It also implies a degree of academic instruction, termed by the University of Paris the Faculty of Arts.

FACULTY of Actuaries.—This body, which was constituted in Edin. in 1856, now occupies a prominent and useful position; having done much to promote the study of the principles and practice of Ins., and collateral subjects. In 1868 it obtained a Royal Charter of Incorp. from the Crown. This Charter contains the following interesting passage:

> That the profession of Actuary, to which the petitioners belong, has been called into existence mainly by the requirements of life assu. inst., the sound management and prosperity of which depend to a great extent on correct obs. and calculations in regard to the duration of human life, and the prob. rate of int. to be realized over a prolonged tract of future time: That the bus. of life assu. has been extensively and successfully carried on in Scotland, and from the time of its first introduction, in the beginning of the century, to the present time, it has continued steadily to develope, and a very large amount of the savings of the people of the U.K. for the future benefit of their families is entrusted to such inst.: That, apart from the schemes which have been in existence for many years for the benefit of the widows of members of the different learned professions, there are assu. inst. estab. in Scotland whose aggregate obligations to the public now probably exceed *eighty millions* stg. and whose invested funds amount to upwards of *twenty millions*: That it is mainly in connexion with the proper regulation of the affairs of these inst. the skill and services of an actuary are called into requisition; his special duties being—*Firstly*, to take care that the inst. under his charge, or which may at any time desire his opinion and advice, is founded on a safe basis, both as regards the rate of mort. assumed for any particular country, class, or sex, and the rate of int. at which it may be calculated the money entrusted to the care of such inst. can be safely improved. *Secondly*, to ascertain from time to time, as the inst. makes progress, by appropriate calculations, whether the rate of mort. actually experienced, and the rate of int. realized, are in accordance with the data assumed; for the performance of these duties it is evident that not only a sound knowledge of mathematical principles is required, but also the practical application of financial judgment and experience: That, in addition to the requirements of life assu. inst., the profession of actuary is largely called into requisition, in the same manner as that of advocate or barrister, in advising and directing the public in regard to a great variety of pecuniary interests, frequently involving interests of large amount: That the responsibility attaching to the profession of an actuary is consequently great, requiring the services of well-educated and trustworthy men, specially trained in actuarial bus. and calculations, more especially as the subject of their professional study is one with which the general public are almost entirely unacquainted, and in which, therefore, they must be wholly dependent upon the skill and integrity of the actuary employed: That the actuaries of Scotland, in the year 1856, formed themselves into an asso. or faculty, with the object of uniting in one body those practising the profession, and of promoting the studies necessary thereto, and generally of furthering the objects in which, as members of the same profession, they have a common interest: And that the petitioners humbly conceive that it would tend greatly to promote and facilitate the attainment by the members of their profession of the qualifications which are essential to the proper performance of their important duties, and consequently that it would conduce much to the benefit of the public, if the petitioners who form the existing body of actuaries in Scotland were united into a body corp. and politic, having a common seal, with power to make rules and bye-laws for the qualification and admission of members and otherwise: And the petitioners therefore humbly prayed, etc.

And it is provided (*inter alia*) that the So. may by its bye-laws, rules, and regulations, constitute and appoint a committee of examiners for the purpose of conducting and regulating such examination of entrants and others, as the corp. may from time to time direct, etc.; and that the course of education to be pursued, and the amount of general and professional acquirements to be exacted from such entrants, shall be such as the corp. shall from time to time fix.

It was a Committee, appointed jointly by the Faculty and the Asso. of Managers, that undertook the superintendence of the inquiry which resulted in that most excellent work, *The Mort. Experience of the Scottish Life Assu. Offices*, pub. in 1872.

At the end of 1874 the Faculty inrolled 8 hon. fellows, 59 fellows, and 12 associates—total 79. It is acquiring a useful library of reference, of which an excellent catalogue was pub. in 1873.

Out of this corp. has arisen, we believe at the instance of Mr. W. T. Thomson, the "Actuarial So. of Edinburgh," which is in the nature of a debating club for the young men who are students preparing for admission to the Faculty. Its president is chosen from the Faculty annually. Mr. T. B. Sprague, M.A., fills the office for the current year; and delivered an address, *On the Usefulness of Mathematical Studies to the Act.*, which we understand will be reprinted in vol. xviii. of *Assu. Mag.* [This para. must be read as a correction of the art. ACTUARIAL SO. OF EDIN.]

FACULTY OF ADVOCATES (SCOTLAND).—Estab. 1532. The number was at first limited to 10; but has since become unlimited. Its numbers now exceed 400. In 1830 a Widows Fund was estab. for the Faculty. We have a vol. of documents relating to this Asso.: *Printed Papers relative to the Widows Fund of the Faculty of Advocates from its estab. in* 1830 *to June*, 1852, which contains a number of reports upon investigations, etc., mainly by the late Mr. James Cleghorn, which we shall speak of more in detail under WIDOWS FUNDS.

FÆCES.—Dregs or lees of wine; the settlement of any liquor. The excrement of animals.

FAINTING, DEATHS FROM.—See SYNCOPE.

FAIR SO. FOR INS. BIRTHS, MARRIAGES, AND SERVICE.—Founded in 1710, and held at the "Bunch of Grapes, against the Leg Tavern." The So. claimed to be the first for carrying on SERVICE INS.; but it was not so, as we shall show under that head.

FAIR SO. OFFICE, against the Sieve Ale House, Little Minories.—This was one of the numerous so-called Ins. projects, better designated "Little Goes," founded in the reign of Queen Anne. This particular Asso. appears to have been founded early in 1712. In the *Spectator*, 31 Mar. same year, appeared the following:

> From the Office against the Sieve Ale House in the Little Minories, where proposals at large may be had gratis. This is to give notice that at the request of several subscribers will be opened on Thursday, the 3rd April, a new 20*s*. Book at 100 % for the first 500 that enters to receive in 3, 4, 5, 6, 7, or 8 weeks at the farthest, and no person to pay more than 5 weeks. The Books that were opened

> the 3rd March last at the office aforesaid have met with such great incouragement that they are now shut up, and will so continue to the 7 April; at which time and place fresh subs. will be taken on the former books.

In the *Post-Boy*, 13 May, 1712, the following:

> From the *Fair* So. Office, kept against the Sieve Ale House in the Little Minories, near Aldgate, where several persons have receiv'd great advantages in a very short time, and likewise for the greater advantage of all subscribers, this is to give notice that there will be open'd to-morrow, being the 14th inst., three Books, the 1st on 5*s.* Bills, the 2nd on 10*s.* Bills, the 3rd on 20*s.* Bills, where the return is quick and with great advantage. Proposals at large to be had at the office aforesaid. [Gambling Ins.]

FAIRBAIRN, G. H., Sec. of *Caledonian* since 1865.

FAIRBAIRN, William, C.E., pub. in 1844: *Report on Construction of Fire-proof Buildings.* [Fire-proof Buildings.]

FAIREST and Most Beneficial So. at Sword-Cutters, Corner of St. Paul's Churchyard.—Founded in 1711 for carrying on the bus. of Apprenticeship, Birth, Marriage, and Service Ins.

FAIREY, John Wilkinson, Sub.-Man. of *British Equitable* since 1868. Mr. Fairey was trained to the business of banking.

FAIRMAN, William, Life Accountant in *Royal Exchange* from 1792 to 1820. In 1795 he pub. *An Account of the Public Funds, etc., and of the Stocks of some of the principal Public Cos. in Lond.*, etc. This work passed through many editions. 7th ed. by Bernard Cohen, 1824.

In 1811 he pub. *An Examination of certain Rules used in Valuing Life Assu.*

FAIRS.—Those who would fully understand the important uses of fairs in developing the commerce of the middle ages must read chap. vii. of Reddie's *Historical View of the Law of Maritime Commerce*, 1841. See also, for another purpose, art. Plague Spots of the World in the present work.

FAITHFUL Office for the Ins. of Baptisms.—Founded in 1710, and kept at the Widow Pratt's Coffee-house, Cateaton Street. Some account of it has been given under Christening Ins. It also undertook Birth, Marriage, and Service Ins.

This office in 1711 took up the bus. of ins. upon the lives of women in childbed [Childbirth Ins.]

FALCON Life Assu. Co.—Founded in 1854, with an authorized cap. of £100,000, in 10,000 shares of £10. The prosp. said: "In this inst. assu. are effected on the lives of all classes, at home or abroad," and it proceeded:—

> The intrinsic value of Life Assu. is now so universally admitted that he whose income depends upon mental or physical exertion for making provision for those dependent upon him, cannot be held blameless in neglecting it, especially as its advantages may be secured by the exercise of a little prudence, even where incomes are limited or precarious.
>
> The Gov., duly appreciating the importance of Life Assu., has wisely reduced the stamp duties hitherto imposed, as an encouragement to its more general adoption; and it is prob. that the remaining duties will in time be extinguished, and thus remove a material object to the extension of the system of Life Assu. found to be the best means for remedying a large amount of suffering, arising from improvidence, negligence, or ignorance of its advantages.

The Co. undertook the ins. of lives deviating "from the standard of full health;" 80 per cent. of profits to parti. pol.-holders. Among the "features" were "unquestionable security," "pol. indisputable, unless procured by fraud, no advantage being taken of an unintentional omission, mistake, or error," "liberal regulations in the mode of effecting assu. and payment of prems.," "pol. may be promptly effected," "great facilities to those who require to travel to any part of the world," "a more equitable practice than has hitherto prevailed is adopted by this So. in its rates for acclimatized lives," "health of annuitants considered," "deposits of money," "non-forfeiture of pol. after 3 ann.prems. paid, by way of loan at 5 p.c., and after 5 ann. prems., by way of free pol.," "half-credit," "the rates of prem. have been specially calculated for this So."

The Act. and Sec. was Mr. Thomas Walker, B.A.

The bus. of the Co. was small, and in 1856 was trans. to the *Bank of London and N. P.* Life, whereby, in process of time, it became absorbed into the *Albert*, and the ordinary consequences followed.

On the 26 March, 1870 [14 years after amalg.], an order was made to wind up the Co. Lord Cairns's second award, 1873, furnishes a concise account of what followed:—

Claims have been estab., but the shareholders are entitled to be indemnified in respect thereof by the *Bank of London Asso.* These claims are accordingly taken as established against the *Bank of London Asso.*; the only assets of the So. are £475, voluntarily subs. by shareholders. They will be applied in payment of these expenses:—Liquidation in Chancery, £322 17*s.* 9*d.*; promoters' expenses, £7 11*s.* 5*d.*; reconstruction committee, £6 5*s.* 9*d.*; arbitration, £117 7*s.* 9*d.*; total, £454 1*s.* 11*d.* The estimated bal. of assets is £20 8*s.* 1*d.* This, when ascertained, will be returned to the shareholders who subs. the £475.

FALCONER, William,—author of "The Shipwreck," a poem,—pub. in 1769: *An Universal Dict. of the Marine; or, a copious explanation of the technical terms and phrases employed in the construction, equipment, furniture, machinery, movements, and military operations of a ship*, etc. Other eds. were pub. in 1771, 1780, 1784, 1789. A new ed. was pub. in 1815, edited by Wm. Burney, LL.D., and modernized and enlarged. There is very little in this work relating to Marine Ins.; yet it was long regarded as a work of considerable authority, and decisions in the Law Courts have been governed by its dictum.

FALCONER, William, M.D., Bath, pub. in 1781: *Remarks on the Influence of Climate, Situation, Nature of Food and Way of Life, on the Dispositions and Temper, Manners, etc., of Mankind.* A curious book.

FALGATE, Isaac, pub. in 1699: *Tables of Int.* In 1710 the following announcement was made: "There is now pub. and added to Isaac Falgate's New Tables, an Explanation of them in French, which show int. for any time for all rates, and the daily income or amount of annuities from £1 to £5000 p.a. exactly to the tenth part of a penny. Price 6*d.* Sold by G. Sawbridge, in Little Britain, and others."

FALL of Building.—The National Board, U.S., fire pol. contain a condition that "if the building shall fall, except as the result of fire, all ins. by this Co. on it, or its contents, shall immediately cease and determine." Where a building had fallen as a consequence of explosion, and afterwards took fire, it was *held*, that the building having fallen down, ceased to exist as such, by a cause, or by reason of a peril not insured against: fire must be the *efficient* cause, and the loss the *direct* effect of the fire. The cause of the loss here was not the *fire*, but the *fall*. That a fire springs up afterwards in the ruins, and destroys the fallen materials, is something beyond the contract. The materials were not insured; the building was.

On the other hand, where one of the walls of a granite building gave way, and half of the store and the adjoining building fell; and shortly afterwards a fire broke out *in the ruins of the adjoining building*, which communicated with the remaining portion of the granite store, the pol. being upon "stock in the granite store," it was *held*, that the insurers were liable for damage from fire, and from water used to extinguish it, *to goods not displaced or injured by the fall*. In this case the fire broke out and burned the goods before there could be any interposition for their safety.

The burning of the "Patterson Warehouse," in the City of Philadelphia, in Aug. 1869, was caused by the *falling* of Sec. H. of the building, from overloading with whisky in barrels, which, bursting in the fall, permitted the liquor to come in contact with the boiler fires under the pavement, thus setting the building on fire, and causing a fearful explosion, destroying Sec. H. completely, and communicating flames to the adjoining sections, until the result was an unmanageable conflagration, whereon the loss paid by the fire underwriters on whisky alone was 2,025,590 dols. on an ins. of 2,647,350 dols.

There was ins. upon "whisky in Sec. H. to amount of 576,250 dols. covered by two classes of pol.; one that of the National Board, which, as we have seen, specially exempts consequences of fall; the other of earlier date, "which in Equity can attach only to property partially destroyed by causes other than fire," and hence were only *partially* liable.

At the time of the adjustment of the loss, the exact origin of the fire had not been agreed upon; there were other attending circumstances of doubt, and uncertainty as to the result of a suit; so a compromise was effected, by which the National Board pol. paid 50 p.c. "of their face," and the others 75 p.c.: being, as the Adjustment Committee expressed it, "strictly a compromise on the uncertainty of the facts, and in no manner as implying an invalidation of the 'falling' clauses in the pol."—Griswold's *Fire Underwriters' Text Book*, 1872.

FALLATI, Dr., Professor of Statistics and Political Hist. in the University of Tübingen, published, in 1839, a paper: *Statistics of the Pop. of Norway*, of which a translation will be found in vol. ii. of *Statistical Journ.*

FALLING Market.—Questions not unfrequently arise in the adjustment of fire, and the settlement of marine ins. losses, regarding the consequences of falling or rising markets. This subject will have to be considered in some detail under Fire Losses, Adjustment of; but in the mean time we may notice a modern case under a marine ins. pol.

In *Ralli* v. *Universal Marine* Ins. Co., before the English Courts in 1861, the facts were as follow: The owners of a cargo of wheat insured it for £7000. The market having fallen, they sold it for £5700, "including freight and ins., payment in cash in exchange for bills of lading, and pol. of ins. effected with approved underwriters." The vendors reserved a right under the pol. when indorsed to purchaser in the £1300 ins. over price sold. The cargo was totally lost. The Ins. Co. paid the purchaser £5700, and paid the £1300 into court. V.C. Wood held that the vendor was entitled to the £1300. [4 De G. F. and J.]

FALLING Sickness.—*Caducus morbus.* Epilepsy; an affection in which the patient suddenly falls to the ground.

FALSE Keel.—The timber added below the main keel, to serve as a defence in the case of grounding; also by deepening the vertical plane, to enable the ship to take a better hold on the water, and therefore to carry sail with greater ease.—*Brande.*

FALSE Mort. Tables.—See Mort. Tables, False.

FALSE Representations.—See Fraud; Representations; Warranties.

FALSE Swearing, in Relation to Claims.—It has been the custom from the beginning to stipulate in the conditions of fire ins. pol., that all claims made under the same shall be verified either by oath or solemn declaration; and there has been the corresponding condition, either express or implied, that any false swearing in this respect should cause forfeiture of all benefit under the contract. The precise practice of offices varies; but the principle has become estab. alike through Europe and America. In the U.S., where the contract of ins. is construed more strictly than in the U.K., the pol. have been rendered very stringent in this respect. We propose to give a brief outline of the law as it now stands.

In the case of *Moadinger* v. *Mechanics* Fire Ins. Co. 1829, it was laid down in the N.Y. Courts that by the term "false swearing," as used in the conditions of the pol., was meant an attempt to defraud the Co., by swearing intentionally, and with bad motives, to the existence of property which the insured had never lost, or by greatly overcharging that which was destroyed, or not acknowledging that which was saved. [2 Hall, N.Y. 490.]

In the English case of *Levy* v. *Baillie*, 1831, the condition of the pol. was, that if there appear fraud in the claim, or fraud or false swearing or affirming in support thereof, the claimant should forfeit all benefit under the pol. The insured swore his loss at £1085. The jury returned a verdict in his favour of £500. The defendant applied for and obtained a new trial, on the ground that the finding of £500 damages, instead of the amount sworn, was in effect a verdict for defendant under the said condition.

In *Regnier* v. *Louisiana State* Marine and Fire Ins. Co., 1838, it was *held*, that if statement of loss sworn to by claimant is disproved by witnesses, he is precluded, on that ground, from recovering on the pol. [12 La. 336.]

In *Marchesseau* v. *Merchants* Ins. Co., 1842, under a pol. of ins. which provided that if there should be any false swearing on the part of the insured, he should forfeit all claim to the pol., a failure by the latter to sustain his affidavit by direct evidence to the amount claimed, will not be considered as proof of having sworn falsely, and thereby forfeited the pol. In open pol. it is often extremely difficult to prove the actual value of the goods lost; it suffices to show by testimony the great prob. of the truth of the affidavit; and in weighing this testimony the characters of the insured, as well as the credibility of the witness, must be considered. [1 Rob. La. 438.]

In *Wightman* v. *Western Marine* and Fire, 1844; in *Hoffman* v. *Western Marine* and Fire, 1846; in *Franklin* Fire Ins. Co. v. *Updegraff*, 1862; in *Marion* v. *Great Republic* Ins. Co., 1864; and in *Franklin* F. Ins. Co. v. *Culver*, 1865; the same ruling is upheld.

In the case of *Park* v. *Phœnix* Ins. Co. 1859, where the defendants set up as a defence to the claim the plea that the plaintiff in making his claim had misrepresented and overstated the amount of his loss, contrary to the form and effect of the condition of the pol., it was *held*, that to sustain this plea it was necessary to prove that the over-estimate did not arise from mistake or inadvertence, but was made designedly for the purpose of obtaining a larger sum than the loss really caused, or to prevent close inquiry. *Held*, also, that upon the evidence it being prob. that the loss, though over-estimated, was equal to the sum insured, and there being circumstances which might explain the over-charges, the jury were warranted in finding for the plaintiff. [19 Upper Canada, Q.B., 110.] [FRAUD.]

FALSIFICATION.—A term synonymous with *adulteration* and *sophistication*, in reference to the frauds practised in preparing articles of food and medicine; now happily made a punishable offence. Also the wrong rendering of accounts.

FALSIFYING ACCOUNTS.—This is a criminal offence, punishable, on proof, with imprisonment with or without hard labour.

FAMES (from the Greek, *to eat*).—Famine; hunger. Hence the terms *cura famis*, or abstinence from food, and *fames canina*, voracious or canine appetite. [FAMINE.]

FAMILIA.—In a legal sense, a portion of land sufficient to maintain a family; sometimes called a *hide* of land; sometimes a *manse:* sometimes *caracuta*, or a plough-land—containing as much as one plough and oxen could cultivate in a year.—*Cressy's Church Hist.* 723. It is also used to signify a house or family, being a subdivision of *gens*, or clan.

FAMILY.—Webster gives as the first of several definitions of this word: "The collective body of persons who live in one house and under one head or manager; a household, including parents, children, and servants, and, as the case may be, lodgers or boarders." The term has many other significations, but we have alone to do with this. It has been said with great truth, that of all the institutions which have been established among men, that of the family is the most primitive and the most humanizing. It is the corner-stone of the social edifice. The obligations of family ties act and re-act in relation to Ins. in its various branches. Fire ins. protects the house and household goods; life ins. provides the means of sustaining the household when the head shall be called away; accident ins. aids against misfortunes during life. The comforts of a home tend to increased health and longevity; and here a long string of sanitary considerations spring up. Health and longevity greatly increase the pecuniary advantages of life ins.—they concrete into bonuses. Marine ins. plays its part in facilitating trade, and thus cheapening the luxuries of life. Educational and marriage endowments may aid in the family economy.

Attention was drawn to the subject of families in the first instance as a means of estimating the number of inhabitants in towns and countries. The number of occupied houses in a village or town could be usually ascertained without much trouble, and without any domestic intrusion. This multiplied by the average number of each family, gave the pop. The imposition of a hearth-tax furnished some approximate means for estimating the pop. of the kingdom. We shall now glance at a few of the results of early inquiries of this class.

Grant, in his *Natural and Political Obs.*, etc., 1661 (a 3rd ed. of which was pub. 1665, from which we quote), offers various opinions regarding families. In his "Index," he says: "74. That about 3 die yearly out of 11 families containing each 8 persons." Three families are meant.—In the text he says he found families consist of 8 persons, "viz. the man and his wife, 3 children, and 3 servants or lodgers." "75. There are about 12,000 families within the walls of London."

In our art. DUBLIN we have shown the estimates which were made by Sir William Petty regarding the numbers of families and hearths in that city in 1671.

In the *Natural and Political Obs. and Conclusions upon the State and Condition of England*, 1696, by Gregory King, Lancaster Herald, it is estimated that the number of persons to a family in 1696 was 4 1/13 for the whole kingdom. He, treating of "the several distinctions of the people as to males and females, married and unmarried, children, servants, and sojourners," gives from the "assessments on marriages, births, burials, etc.," the following T. of proportions:

		People.	Males.	Females.
Husbands and wives	at above 34½ p.c....	1,900,000	950,000	950,000
Widowers	do. 1½ ,, ...	90,000	90,000	...
Widows	at almost 4½ ,, ...	240,000	...	240,000
Children	at above 45 ,, ...	2,500,000	1,300,000	1,200,000
Servants	at almost 10½ ,, ...	560,000	260,000	300,000
Sojourners and single persons	4 ,, ...	210,000	100,000	110,000
	100	5,500,000	2,700,000	2,800,000

It will be understood that the total pop. here given is based upon an estimate. He considered the above proportions differed under different circumstances; and to illustrate this difference, he gave the following T.:

	Lond. Bills of Mort.		The other Great Cities.		The Villages and Hamlets.	
Husbands and wives ...	37 p.c.	196,000	36 p.c.	313,200	34 p.c.	1,394,000
Widowers	2 ,,	10,600	2 ,,	17,400	1½ ,,	61,500
Widows	7 ,,	37,100	6 ,,	52,200	4½ ,,	184,500
Children	33 ,,	174,900	40 ,,	348,000	47 ,,	1,927,000
Servants	13 ,,	68,900	11 ,,	95,700	10 ,,	410,000
Sojourners, etc.	8 ,,	42,400	5 ,,	43,500	3 ,,	123,000
	100	530,000	100	870,000	100	4,100,000

He further estimated:

That the *Bachelors* are about	28	p.c. of the whole
Whereof those under 25 years are	25½	,, ,,
And those above 25 years are	2½	,, ,,
That the *Maidens* are about	28½	,, ,,
Whereof those under 25 years are	26½	,, ,,
And those above 25 years are	2	,, ,,
That the *Husbands*, at a medium, are aged	43	years a piece
,, *Wives* ,, ,,	40	,,
,, Widowers ,, ,,	56	,,
,, Widows ,, ,,	60	,,
,, *Children* ,, ,,	12	,,
,, Servants ,, ,,	27	,,
,, Sojourners ,, ,,	35	,,
At a medium	27½	

The number of families in *Rome* in 1740 was 32,158, and of inhabitants 140,080, or 4⅓ to a family.

About 1742 it was found that in the whole province of *Vaud*, in Switzerland, the number of persons to a family was 4⅓.

In 1743 it was found by Maitland, the historian, that the proportion of inhabitants to families, in the parish of St. Cuthbert, forming a considerable district of the city of *Edinburgh*, was 4 1/10 to 1.

Dr. Short tells us in his *Comparative Hist. of the Increase of Mankind*, pub. 1767, that in order to be fully satisfied of the number of persons to be allowed to a family, he procured the true number of families and individuals in 14 market towns, some of them considerable for trade and populousness; and that in them were 20,371 *families*, and 97,611 individuals, or but little more than $4\frac{3}{4}$ to a family. In order to find the difference in this respect between towns of trade and country parishes, he procured from divers parts of the kingdom the exact number of families and individuals in 65 country parishes. The number of *families* was 17,208 ; *individuals* 76,284 : or not quite $4\frac{1}{2}$ to a family.

From an account taken in 1770 it appeared that the number of inhabitants in *Leeds* was 16,380, and of *families* 3899. The number of persons to a family was therefore $4^1/_5$.

It was ascertained in *Glasgow* in 1821 that an average family there consisted of 4·681 persons.

The number of families, arranged with special regard to the occupation of the head of each, was first made the subject of official inquiry in the Censuses of 1821 and 1831. In the latter year the total number of persons included in such families was also ascertained :

Occupations.	Families. 1821.	Families. 1831.	Persons. 1831.
1. Agricultural Occupiers	250,000	250,000	1,500,000
2. ,, Labourers	728,956	800,000	4,800,000
3. Mining ,, ...	110,000	120,000	600,000
4. Millers, Bakers, Butchers	160,000	180,000	900,000
5. Artificers, Builders, etc.	200,000	230,000	650,000
6. Manufacturers...	340,000	400,000	2,400,000
7. Tailors, Shoemakers, and Hatters ...	150,000	180,000	1,080,000
8. Shopkeepers	310,239	350,000	2,100,000
9. Seamen and Soldiers	319,300	277,017	831,000
10. Clerical, Legal, and Medical	80,000	90,000	450,000
11. Disabled Paupers	100,000	110,000	110,000
12. Proprietors, Annuitants...	192,888	316,487	1,116,398
	2,941,383	3,303,504	16,537,398

Giving a fraction over 5 for each family in 1831 ; but the figures of the T. are clearly approximate only.

In 1841 the number of families was not recorded at the Census.

In 1848 a Report was made by a Committee of the Statistical Society of Lond. "appointed to make an investigation into the state of the poorer classes in St. George's-in-the-East." [*Statis. Journ.* xi. p. 235.] The following T. is given—the ages of the mothers included therein ranging from 14 to 43 years.

No. of Years since birth of 1st child.	No. of Families.	No. of Children Born.	Average No. of Children to each Family.	No. of Children Alive.	No. of Children Dead.	Mort. p.c.
1	56	59	1·05	52	7	11·86
2	60	88	1·46	69	19	21·59
3	54	99	1·83	76	23	23·23
4	68	190	2·80	122	68	35·79
5	57	163	2·86	118	45	27·61
6	63	208	3·30	151	57	27·40
7	78	273	3·50	195	78	28·15
10	259	1197	4·62	752	445	37·18
15	223	1361	6·10	841	520	38·21
20	203	1395	6·87	799	616	44·16
25	137	1001	7·31	545	456	45·55
30	118	927	7·86	481	446	48·11
35	59	445	7·54	196	249	55·96
40	41	335	8·17	130	205	61·19
45	17	166	9·76	72	94	56·63
50	9	81	9·00	24	57	70·37
55	2	18	9·00	5	13	72·02
60	2	28	14·00	8	20	71·43
Total.	1506	8034	5·53	4616	3418	42·54

In 1848 also Dr. Farr read before the Statistical So. of Lond. a paper: *Statistics of the Civil Service of Eng., with Obs. on the Constitution of Funds to provide for Fatherless Children and Widows* [*Statis. Journ.* xii. p. 127], wherein is a T. showing the constitution of families of the Civil Servants. A few enter the service under the age of 20. It is shown that 100 officers of that age (15-20) had 77 fathers, 90 mothers, and 209 sisters living. At the age 25-30, of 100 many were married ; 64 had fathers; 72 mothers ; 49 wives ; of whom 35 had children ; 14 no children ; and the children living were 63 ; 222 sisters of the 100 officers were living. Advancing to the age of

50-55, the constitution of the family had undergone great changes: 100 officers had only 8 fathers, 13 mothers, 144 sisters living, and 83 wives; of whom 67 had children; 16 no children; the children were 351, of whom 131 were under, and 220 above 15 years of age. Following a man in his procession through life, the *number* of the family grouped around him was greatest—*nine*—at the ages 30-50; but it differed little all along from the age of 25 to 65. As the fathers, mothers, sisters, and brothers, on whom he rested, silently disappear, the children take their place, and rest upon him. After 70 his children decrease, and he would appear lonely if the grand-children (which are not included in the T.) did not take their place, and shed verdure and youth round his decay. "The T. (says Dr. Farr), which is perhaps one of the most curious that has been framed, presents many points of practical interest. It will be observed that besides wives and children, officers may have fathers, mothers, sisters, and other relatives dependent on them for support."

The Census of 1851 showed that the number of separate families in Gt. Brit. was 4,312,388, averaging nearly *five* persons to each family. That there were 3,648,347 inhabited houses, averaging more than 5½ persons to each house. The inhabited houses had nearly doubled during the half century, and upwards of 2,000,000 of new families had been founded! Notwithstanding this, there were no less than 1,413,912 bachelors between 20 and 40 years of age, and 1,407,225 spinsters of the same age—to say nothing of 359,969 *old maids* above 40 years of age!

The Hon. Wm. Barnes, in his 8th Ann. Rep. as Sup. of the N. Y. Ins. Department, pub. the following interesting T.: offering these reflections upon it:

> In considering merely the question of hereditary influences on mort., the following T. will exhibit to the eye, the fact that if we go back only a dozen generations in the direct ancestral line, the blood of 8190 different persons commingles with that of our own children, and in each one of these ancestor's veins flowed a scarlet current of life equally freighted with infinite ancestral tendencies. In the descending line, assuming husband and wife to have four children, and that this double or quadruple multiplication will continue for only twelve generations, we see that our own blood will inspire or misguide 5,592,404 different human beings.

Table showing the number of lineal ancestors of a Husband and Wife ascending 12 generations, and the number of descendants in 12 generations, assuming a quadruple ratio of average increase.

12	… … … … … … …	4,096	
11	… … … … … … …	2,048	
10	… … … … … … …	1,024	
9	… … … … … … …	512	
8	… … … … … … …	256	
7	… … … … … … …	128	
6	… … … … … … …	64	
5	… … … … … … …	32	
4	… … Great Grand-parents,	16	
3	… … … Grand-parents,	8	
2	… … … … … Parents,	4	Total, 8,190 ancestors.
1	… … … … … … …	HUSBAND AND WIFE.	
2	… … … … … … …	4	children.
3	… … … … … … …	16	grand-children.
4	… … … … … … …	64	great grand-children.
5	… … … … … … …	256	
6	… … … … … … …	1,024	
7	… … … … … … …	4,096	
8	… … … … … … …	16,384	
9	… … … … … … …	65,536	
10	… … … … … … …	262,144	
11	… … … … … … …	1,048,576	
12	… … … … … … …	4,194,304	
	Total … … … …	5,592,404	descendants.

The T. must be regarded as theoretical rather than practical; for no allowance is made for barrenness, infant mort., etc., etc. We have seen the calculation extended much further in each direction.

At the census of 1861 the number of families in E. and W. was found to be 4,491,524; and the proportion of persons was as 447 persons to 100 families, or 4·47 persons to 1 family; or nearly 9 persons to two families. The proportion of persons to a family varied from 4·69 in 1801 to 4·83 in 1851. And the reduction of the proportion to 4·47 in 1861 was considered to be referable to the multiplication of families by the recognition of lodgers as constituents of the class. If the 1684 public inst. and their inmates, and persons out of houses (397,582), were excluded from the calculation, the proportion of persons to a family would then be reduced to 4·38. There were 12 families to 10 houses.

The Census Commissioners distinguish three classes of families—(1) having at its head a husband and wife; (2) a widower or a widow at its head; (3) a bachelor or a spinster at its head. The head of the family was absent in 3163 instances out of 65,031; and of 61,868 families, 41,526 had the husband and wife at their head; 11,099 had a widower or a widow, and 9243 had a bachelor or spinster at their head. About two-thirds of the then existing families consisted of married couples; 6487 were alone; and the rest, 31,896, had one or more children. There were 2·26 children on an average to each family; or 4·26 children and parents, including the father and mother, to each family of this class. Striking off the families consisting of husband and wife, sole, there remain 31,896 pairs (out of the number above named), having with them at home 93,788 children; that is, 2·94 children to a family, or 4·94 children and parents to a family. A fourth part of the families had 4 children or more at home; and these families of parents and children consisted of 7 persons on an average. The families of which widowers or widows were the heads had children connected with them in 6677 out of 11,099 cases.

In our art. CONSUMPTION we quote a paper by Dr. Edward Smith, read before the British Asso. in 1862, wherein he speaks of the unusually large families resulting from consumptive parents. And this opens up another series of considerations, which will be discussed under FAMILY HIST.; HEREDITARY DISEASES; and MEDICAL SELECTION.

The Census Commissioners of 1871 offer the following definition of "Family":

> The natural family is founded by marriage, and consists, in its complete state, of husband, wife, and children. *Family* is generally also held in England to be synonymous with *household*: as a family occupies a house, and the particulars of each family were enumerated in Householders' Schedules. But it happens that families, as understood at every census since 1801, are more numerous than houses; they are generally in the proportion of six families to five houses. One house in five contains on an average two families. The word *household* is therefore not strictly applicable, and *family* is not easily defined for the practical purposes of the census. After the most careful consideration, we held the occupier of a house or apartment to be the head of a family, and therefore have taken the number of such occupiers to represent the number of families. The general results appear to agree with those of earlier censuses. So the family of the census may be said to consist always of a head, with generally dependent members, living together in the same dwelling.

Keeping this definition in view, we may now enter upon the details revealed by that census.

In 1871 the number of inhabited houses was 4,259,117, and the number of families was 5,049,016. The number of families was in the proportion of 119 families to 100 houses. The number of persons to a family was 4·50. The inmates of barracks, prisons, workhouses, and other large edifices, are counted as separate families; but if such cases be excluded, the number of persons to a family is reduced to the proportion of 4·40 instead of 4·50.

In London, owing to the excess of occupying lodgers, the number of persons to a family (4·32) is below, and the number of families to a house (1·80) is above the average. Devonshire presented a somewhat similar anomaly: the numbers to a family are below, of families to a house above, the average. The disturbance was found to be produced by Plymouth, where the number of families to a house was 2·22, while the proportion in the rest of the county was 1·21.

The following T. gives a summary of the leading facts as ascertained at each census from 1801 downwards, for E. and W.:

Date of Enumeration.	Inhabited Houses.	No. of Families.	Persons.	Persons to a Family.	Persons to an Inhabited House.	Families to an Inhabited House.
1801—Mar. 10..	1,575,923	1,896,723	8,892,536	4·69	5·64	1·20
1811—May 27...	1,797,504	2,142,147	10,164,256	4·74	5·65	1·19
1821—May 28...	2,088,156	2,493,123	12,000,236	4·81	5·75	1·19
1831—May 29...	2,481,544	2,911,874	13,896,797	4·77	5·60	1·17
1841—June 7....	2,943,945	not returned	15,914,148	?	5·41	?
1851—March 31	3,278,039	3,712,290	17,927,609	4·83	5·47	1·13
1861—April 8.	3,739,505	4,491,524	20,066,224	4·47	5·37	1·20
1871—April 3..	4,259,117	5,049,016	22,712,266	4·50	5·33	1·19

From the Census of the City of Bombay, taken 21 Feb. 1872, we gather the following details. In 1864 it had been found that the shore pop., amounting to 783,980 persons, formed 101,890 families; but in 1872 the number of families had increased to 117,454, whilst they were composed of the lesser number of 621,452 individuals. Thus in 1864 the proportion of persons to a family was 7·694; in 1872, 5·291. Dr. Leith, however, points out that in 1864 the number of families was, from causes assigned, understated. In each census the various public inst. in Bombay were treated as so many distinct families.

In 1873 Mr. Francis Galton, F.R.S., read a paper before the Statistical So. of Lond. on: *The Relative Supplies from Town and Country Families to the Pop. of Future Generations;* which embraced an inquiry into the relative fertility of labouring classes of urban and rural pop., not as regards the number of children brought into the world, but as regards that portion of them who are destined to live and become the parents of the next generation. The author says:

> It is well known that the pop. of towns decays, and has to be recruited by immigrants from the

> country; but I am not aware that statistical measurement has yet been attempted of the rate of its decay. This inquiry is part of a larger one on the proportionate supply to the pop. from the various social classes, and which has an obvious bearing on investigations into the influences that tend to deteriorate or to improve our race. If the poorer classes, that is to say, those who contain an undue proportion of the weak, the idle, and the improvident, contribute an undue supply of pop. to the next generation, we are justified in expecting that our race will steadily deteriorate, so far as that influence is concerned.

He next tells us that he obtained from the census returns extracts concerning 1000 *fumilies* of factory hands at Coventry, in which the age of the mother was neither less than 24 nor more than 40 years; and concerning another 1000 *families* of agricultural labourers in rural parishes of Warwickshire, under the same limitations as to the age of the mother. "When these returns were classified, I found the figures to run in such regular sequence as to make it certain that the cases were sufficiently numerous to give trustworthy results."

The 1000 families of the factory hands comprised 2681 children; and the 1000 families of agricultural labourers comprised 2911: hence the children in the urban families—the mothers being between the ages 24 and 40—are on the whole 8 p.c. less numerous than the rural. Mr. Galton says:

> I see no reason why these numbers should not be accepted as relatively correct for *families* in the ordinary sense of that word, and for mothers of all ages. An inspection of the T. does indeed show that if the selection had begun at an earlier age than 24, there would have been an increased proportion of sterile and of small families among the factory hands; but not sufficient to introduce any substantial modification of the above results. It is, however, important to recollect that the small error, whatever its amount may be, is a concession in favour of the towns.

We need not follow the paper further here. It will come up again under Town Life.

In 1874 Mr. C. Ansell, jun., Act. of the *National* Life, pub. *Statistics of Families in the Upper and Professional Classes;* but the results it furnishes will fall to be considered in some detail under Fecundity. He found families of 5 children to be more frequent than any others. Of families with more than 5 the proportion rapidly decreases as the number of children increases. It is only 1 family out of 42 in which more than 12 children are born. The largest families he had under obs. were three of 18 children each; but in 7245 other families not included in his T. there were four cases of larger families, viz. one each of 19, 20, 23, and 25 children.

In the case of the family of 23, all the earlier born children died in infancy. A male died at the age of 14 of hæmorrhage of the lungs; a female at 27 of typhus; a female at 55 of cerebral congestion; a male at 75 of paralysis; a female at 77 of cystitis; a male and a female each at 86 of old age. Three sons were in 1871 living, aged 73, 77, and 79 respectively. The father died at 58 of typhus, and the mother at 86 of cholera.

In the case of 25 children the father was aged 23 and the mother 21 when they married in 1783. The children, 12 sons and 13 daughters, all grew up to be adults; but only 4 of them were living in 1871, viz. 3 daughters at ages varying from 61 to 74, and 1 son aged 68. The child-bearing period extended over 27 years. The father died at age 55 from inflammation; and the mother at 88 of old age.

Among the more remarkable histories of families with which we have become acquainted is that of the *Pearsons*, of Lexton, Notts. Pearson, the grandfather of the present generation, was a bleacher residing in this village. He stood over 6 ft. in height; he married four times. By each of his three first wives he had 13 children; by the last 14—total 53. He died aged 96. Several of his sons and daughters reached 80 years of age; one died at 75 from the effects of an accident.

In *Notes and Queries*, 21 June, 1856, is an account of David Wilson, who died at Madison, Indiana, a few years previously, aged 107, who had been married 5 times, and had had 47 children, 35 of whom were then recently living.

A tomb at Ely, Cambridgeshire, has the following inscription: "Sacred to the Memory of Richard Worster, who died May 11th, 1856, aged 73 years. Also to the Memory of 22 Sons and 5 Daughters."

The administrators of the estate of Heber C. Kimball, late Brigham Young's first counsellor, filed in 1869, at Salt Lake City, a return of distributive shares, subject to the revenue tax, showing 41 children,—30 sons and 11 daughters,—5 being 14 years old, and 4 10 years.

A remarkable instance of mort. in a single family took place early in 1874 near Binghampton, N.Y. On the 28th of December, 1873, a Mr. and Mrs. Holiday celebrated the 65th anniversary of their wedding at Downsville, Delaware County, Penn. At that time 16 children of the family, of which Mr. Holiday was the eldest, were all living, and 14 brothers and sisters of Mrs. Holiday were also in good health, and present at the anniversary. In the space of 3 months thirty—all, in fact, excepting Mr. and Mrs. Holiday—were reported to have died.

In Detroit, U.S., in 1865, there was reported to be existing a family with *six sets of children*. Each parent had been married three times, and had children by each marriage. They were all living happily under one roof.

The subject here naturally turns upon considerations of Fecundity, and under that head we shall pursue it. [Births.] [Female Lives.] [Houses.] [Population.]

FAMILY Assu. and Sick Fund Friendly So.—Founded in 1861, and inrolled under the Friendly Sos. Acts. It advertised a cap. of £125,000, in "shares of £1 each, payable by weekly deposits." It carried on bus. in the North of Eng., and pub. a prosp. of a very seductive character. A quarrel ensued among the parties concerned, and disclosed circumstances of villany, such as nothing but a stringent law of libel could foster and protect. In the end the Sec. was prosecuted for conspiracy, and sentenced to 2 years' imprisonment.

FAMILY and Commercial Life.—This Co. was projected in 1851, by Henry and William Owen; but in common with some other of their projects, it never arrived at maturity.

FAMILY Endowment So., The.—Founded in 1835, with an authorized cap. of £500,000, in 5000 shares of £100; of which £4 was orig. paid up. The peculiar feature of the Co. was that of granting at or after the time of marriage, endowments to the children who might issue therefrom—thus taking upon itself the risk of productiveness of the marriage; a class of bus. possessed of many advantages, and capable of considerable development; but attended with some practical difficulties.

The D. of Sett. of the Co. bears date 17 Jan. 1837; but in the mean time other steps towards a legal constitution had been taken. The shareholders were only to be liable to the extent of the unpaid cap. on their shares. And there was power to dissolve the Co.

In 1836 the founders obtained a special Act of Parl.—the 6 Geo. IV. c. xxi.—*An Act to enable the Proprietors or Shareholders of the Family Endowment So. to sue and be sued in the name of one of the Directors, or of the Chairman or Sec. for the time being of the said So.* This Act received the Royal Assent 19 May, 1836. There are no clauses calling for any special comment here. The names of the shareholders were from time to time to be inrolled in Chancery. The working prosp. issued by the directors contained the following passages:

> The principles of Life Assu. are, in the present day, so well understood that, to any reflecting mind, it must be a matter of surprise that its benefits have not been more generally appreciated. That scarcely one head of a family out of every hundred has yet availed himself of its advantages,—whilst, in every circle, there are so many evidences of the uncertainty of life, as well as of the distress and sorrow consequent upon the widow and fatherless being left unprovided for,—is, indeed, calculated to excite the astonishment and regret of every philanthropist, and of every true political economist.
>
> It is surely the duty of every individual who has placed himself in the responsible position of a husband or father to provide for those helpless beings whose dependence he acknowledges; and unless he be possessed of a well secured and sufficient fortune for that purpose, there are no means whereby he can with certainty fulfil that duty except by a life assu., which of all the plans suggested by wisdom for the good of mankind is the most efficacious--benefiting alike communities and individuals, and enabling every one to improve the worldly condition of himself, and provide for those dear to him and dependent on him, by the mere exercise of a prudent frugality proportioned to his means.
>
> Why, then, is the practice of life assu. not more general? Why do fathers who, during their own lives, have habituated their families to comforts or luxuries, leave them to the hardships of broken up establishments, dependence, and want? It is not because they cannot, as a rule, afford to shelter them from these miseries; nor is it because the prems. payable are too high for the advantages purchased, seeing that the assu. reap the profits which their systematically accumulated payments yield; neither is it from any reasonable doubt as to the ability of an assu. co. to fulfil their part of the contract, for there has never been an instance of a life assu. co. having failed to meet its engagements. What, then, is the reason? Is it thoughtlessness? Is it indifference to the possible, perhaps probable, fate of those dependent on us, or is it a selfish reluctance to abridge any of our present comforts for the sake of making a provision for those who, some day, will stand so much in need of it? Reader, candidly ask yourself these questions, and let conscience give the answer.

Turning to the orig. special feature of the Co., we find the following T. of ann. prems. required to ins. an endowment of £100 to each future child on attaining the age of 21, varying, of course, where the ages of the parents differed from those here given.

Age of the *husband*.	Age of the *wife*.	Ann. prem. p.c. for 22 years certain.			Or ann. prem. to cease at husband's death or after the 22nd payment.		
		£	s.	d.	£	s.	d.
26	20	9	2	3	10	19	0
27	21	8	18	6	10	15	3
28	22	8	14	8	10	11	4
29	23	8	10	11	10	7	5
30	24	8	7	3	10	3	10
31	25	8	3	7	10	0	0
32	26	7	19	6	9	15	8
33	27	7	15	7	9	11	5
34	28	7	11	5	9	6	11
35	29	7	7	5	9	2	7
36	30	7	3	6	8	18	5

This scheme proved a failure, for the very obvious reason that it was made entirely dependent on ann. prems. payable at and after marriage. Those who had children continued to pay; those who had none discontinued their pol. The Co., after some 20 years' trial, abandoned it.

The Co. transacted ordinary life bus.; 80 p.c. of the profits being reserved for parti. pol.

A special branch was formed for *India*; and in a prosp. dated March, 1855, it is announced, "The extensive assurance bus. of the Agra and United Service Bank has been trans. to this Office; and the So. has branch estab. or agencies at Madras, Bombay, Agra, and China." The Co. incurred considerable losses during the Indian Mutiny, 1857-9; and was one of the Brit. offices which applied to the Gov. for indemnity. [India.]

In 1857 the Co. took over the bus. of the *Empire* Life, founded 1854: and Mr. Edwin

Galsworthy, who had been the Act. and Sec. of that Co., became the Act. of this Co. The previous Act. was Mr. W. Lewis; the Sec. Mr. John Cazenove.

In 1861 happened a most material event in the hist. of the Co. Its bus. was trans. to and amalg. with that of the *Albert*. The reason assigned was the losses during the Indian Mutiny, which had prevented the declaration of a bonus in 1858, and would do so again this year. The shareholders were to be paid off at par (£4 p. share), and the pol.-holders were to parti. in the next bonus division of the *Albert*. The subject was brought before two meetings of the shareholders in regular form; and the arrangement was approved and carried into effect. In due course the Co. was dissolved, in accordance with the provisions of its D. of Sett.; and its affairs were supposed to be finally terminated.

The cost of the amalg. to the *Albert*, it afterwards transpired, was £22,650.

On the 17th Sept. 1869, an order was made to wind up the *Albert* Co. Consequences soon developed. It was part of the bus. of the *Family Endowment* to grant annu.; and an indemnity as to these had formed part of the arrangement with the *Albert*. On the stoppage of the last-named Co., the annuitants fell back upon the original Co.; and a petition was filed by Gen. Pott, the holder of two such annu., for winding up the Co. The answer to the petition (on behalf of the shareholders in the *Family Endowment*) was three-fold—1. That the petitioner, although originally a creditor of the Co., had ceased to be so, and had *novated* his contract with the original Co. for one with the *Albert* Co. 2. That the Co. did not fall within the provisions of the Cos. Act of 1862, it having been dissolved a year before that Act came into existence. 3. That this was not a case in which the Court, even if it had jurisdiction, ought to use it. V. C. James made an order to wind up the Co., on the ground that as the Co. had authorized the *Albert* to receive prems. and discharge liabilities under its contracts, the office of the *Albert* really became the office of the *Family Endowment*.

On the 24th Nov. 1869, an order was accordingly made to wind up the Co. This order was confirmed on appeal to the Lord Chancellor. On the passing of the *Albert Arbitration Act*, 1871, the winding-up of the Co. was continued thereunder.

One of the earliest matters which came before the Arbitrator (1 June, 1871) was *Lee's case*. Lee held 200 shares in the *F. Endowment;* and was paid off under the amalg. arrangement already cited. He did not execute any D. of transfer of his shares; and his name still remained on the list of shareholders inrolled in Chancery. His share-certificates were given up to the *Albert*. Lord Cairns held that he was still liable on his shares. This decision governed the other shareholders.

The following was the position of the liq. of this Asso. on the 7th June, 1872, as set forth by Lord Cairns in his first award in the *Albert* Arbitration:—The number of contributories was 62, in respect of 4880 shares, the amount of share cap. for which they were liable being £488,000. A call of £25 p. share had been made. The nominal amount of the call was £122,000, and the expected produce £87,125; the actual produce of the call was £70,783 8*s*. 10*d*. There were no assets of the So. other than the produce of the call on the contributories and the amount to be received from the *Albert* Co. under its agreement to indemnify. The claims estab. against the So. were—annuities, £56,534 5*s*.; endowments, £10,648 5*s*.; total, £67,182 10*s*. Payment of these claims, with int., had been directed. The following had also been partly estimated and partly ascertained:—Expenses of liq. in Court of Chancery, etc., £3032 3*s*. 7*d*.; share of promoters' expenses of Arbitration Act, £453 19*s*.; share of expenses of reconstruction committee, £375; share of estimated expenses of execution of Arbitration Act, £5539 3*s*. 7*d*. Total, £9400 6*s*. 2*d*.

The following add. details were given in the second award of the Arbitrator, 1873:—64 contributories, with 4920 shares, £123,000, liable to a call of £25 a share. Call paid in full by 48 contributories on 3115 shares, £77,875; compromised, 6 contributories, 1025 shares, £5664 15*s*. 4*d*. accepted in lieu of £25,625; abandoned, 5 contributories, 110 shares, £2,750; outstanding, 5 contributories, 670 shares, £16,750; aggregate produce of call, £83,583 8*s*. 10*d*. Claims estab.: annuities, £56,595 0*s*. 2*d*.; endowments, £11,125 14*s*.; life policy, £98 18*s*.; total, £67,819 12*s*. 2*d*.. Int. on claims, £6146 19*s*. 4*d*. Further expenses: Liq. in Chancery, £3529 2*s*. 6*d*.; promoters' expenses, £453 19*s*.; reconstruction committee, £375; arbitration, £6815 5*s*. 9*d*.; total, £11,173 7*s*. 3*d*. Aggregate amount of assets, £95,651 3*s*. 9*d*.; estimated balance of assets, £10,511 5*s*. A return of £3 10*s*. per share had accordingly been ordered to those contributories who had paid in full.

There is yet a final award to be made. [FAMILY INS.]

FAMILY EXCHEQUER BILL.—An ins. asso. under this title was projected in 1860 by Mr. Geo. W. Jones, of the firm of Davies and Co., 1, Finch Lane, "Advice Office for Life Assurers." Its title was afterwards altered to the *Family Exchequer Life*.

FAMILY EXCHEQUER LIFE ASSU. CO.—An asso. under this title was advertised by Mr. G. W. Jones in 1860, but appears never to have been completely founded.

FAMILY HISTORY.—In the practice of Life Ins. it has been found necessary, in view of efficient medical selection, to inquire into the Family Hist., *i.e.* the longevity or otherwise of the parents, and of the brothers and sisters of the proposer, with a statement of the ages at, and causes of, death. In this manner the hereditary tendencies, if any, towards disease may be discovered; and much information obtained, which a skilful medical examiner will know how to apply to the subject before him.

In many cases which come before life offices the personal history of the proposer shows an immunity from all disease; his present health appears perfect; his muscular system is well developed; and there is the appearance of more than ordinary powers of endurance; yet the life is rejected. The agents are astonished; the proposer himself indignant. But there is a reason: the Family History has disclosed that a latent inherited tendency slumbers within, against which the co. has to guard. The medical adviser has to recommend the rejection of the life.

It is a remarkable circumstance that the practice of making such inquiries should be only of comparatively recent adoption. [LIFE INS. PROPOSAL FORMS.] [MEDICAL SELECTION.]

Dr. Stephen Ward, M.D., *On the Medical Estimate of Life for Life Assu.*, 1857, says:

> In consequence of the absolute influence of inheritance as a predisposing cause of certain diseases, family hist. occupies a prominent position in the medical estimate of life. It should be fully elicited by questions as to the age and health of parents, if living, or their ages at death; also, as to the ages at and causes of death of any brothers or sisters that may have died, and the ages and health of survivors. Special inquiries should, moreover, be made as to the existence of consumption or insanity in either of the direct or collateral branches. Parties proposing for life assu. are aware that an unfavourable family hist. tells against a life, and, consequently, at times cover the existence of consumption by describing it under some other name. Thus, a brother or a father is said to have died of asthma or bronchitis, when, on inquiry, the disease is found to have been undoubtedly phthisis; and the very convenient expression, died "at" or "soon after childbirth," is constantly used, not necessarily designedly, where the death has been from some constitutional malady; dying "in childbirth," meaning very often some weeks, and "soon after" many months subsequently to that event. It is obvious, therefore, that not a little tact and patience, and the sacrifice of time on the part of the medical referee, are occasionally necessary in order to arrive at the truth. . . . In some cases it may be desirable to extend family hist. inquiries to the children of the party proposing, inasmuch as, at times, especially in such blood-diseases as struma and syphilis, the condition of the offspring reflects light upon the constitution of the parent.

He adds:

> The medical referee will be alive to the importance of viewing a faulty family hist. in connexion with other circumstances, as, for instance, *occupation*. Thus, a stone mason or baker, who has lost one immediate relative from consumption, is much in the same position as a man who has lost two relatives from such cause, but is pursuing a healthy occupation.

Dr. Brinton, in his excellent little work: *On the Medical Selection of Lives for Assu.*, 3rd ed. 1861, says:

> *Family Hist.*—Mere longevity of ancestors is not unimportant: especially where (as is often the case) it appears to be scarcely explained by the circumstances in which life has been passed. And conversely, it is a suspicious fact to find that the various members of a family have all been cut off at a comparatively early age—even though the diseases that form the immediate cause of death are unlikely, from their nature or variety, to have been the result of any definite tendency to this or that complaint on the part of the family. The term *old age*, always a relative one, often appears to have a meaning specific to different families. Of course, the gravity of the suspicion suggested by the early deaths of a given family will vary with the number of cases on which it is founded; with the proximity of relationship (for example, is most important in direct ancestors, especially in the father and mother); and with the nature of the fatal maladies—being on the whole most serious where these belong to the category of diseases of old age, among which we may especially distinguish cerebral hæmorrhage, paralysis, and idiopathic gangrene.
>
> The more specific reasons for this part of the inquiry are prob. known to all of you. Certain diseases seem to have a special tendency to re-appear in the offspring of those affected with them. And this tendency may remain latent throughout the whole life—that is, may never be called into activity by circumstances: we get instances of "atavism," in which the disease of an ancestor re-appears in his or her grandchild, without visibly involving the immediate parent of the latter. In like manner, the tendency may only be exemplified by collateral branches (for example, uncles and aunts) in one generation, but equally affect the children of the healthier individuals (the nephews and nieces of the deceased ones) in the next generation. *Hence we do not look exclusively to the parents of a given person, but rather to his family in general.* And on the whole, the detection of any one of these "hereditary" complaints in his family hist. indicates that he has a higher liability to the same malady than the mass of the community, whose average mort. forms the basis of life assu.

Dr. A. P. Stewart, M.D., in his *Obs. on the Characteristics of Assurable and Non-Assurable Lives*," 1861, in considering "what is a doubtful life?" says:

> 1. What is his family hist.? If his parents, though each of a long-lived race, have died early, already a suspicion of some family taint dawns upon one. If, in add., we find that one, two, three, the majority, perhaps almost all of his brothers and sisters have died, suspicion strengthens into certainty. If, still further, it appears that these died, not in infancy, but at various ages between 10 and 35, but especially between 15 and 30, we may almost conclude, without further inquiry, that the disease which has wrought such havoc is tubercular consumption.

Dr. Christison, in one of his Rep. *On the Deaths in the Standard Life Assu. Co.* [issued before 1865], says, the practical deductions to be drawn from the facts as to the history of the families of 698 proposers in that Co. were:

> 1. In the eighth part of all proposals of assu. the family hist., by showing the occurrence of one case of consumption, will sound the note of caution; for in one-third of these families, at least one more case is likely to occur. Caution being thus given, the question of eligibility in the instance of any such proposal, will turn upon proof: whether other cases of consumption have occurred in the family; whether the proposer by physical development, or previous illness, or both, betrays the family infirmity of constitution; and whether these, or some of these objections, are either strengthened or counterbalanced by the collateral circumstances mentioned in my former rep.
>
> 2. Assu. cos. who decline under-average risks should be prepared, as a general rule, to decline about a *twenty-fourth part* of all proposals on the single ground of the family hist. presenting a hazardous risk from consumption: this hazard being shown, among other proofs, by two cases of the disease having occurred in the family of a proposer of assurance. . . . This rule has been objected to as a general one, on the ground that it circumscribes too much the transactions of an assu. co.

> The extent of the limitation is now exactly ascertained, and it embraces a 24th part of all proposals. This is not so large a proportion as the objectors must have anticipated; and it is reduced to a 28th by admitted exceptions.
>
> 3. But a scrutiny of the experience of the *Standard* Assu. Co. will show that the rule is one *essential to safety*. For, in the first place, of the 29 families in which at least two cases of consumption have occurred, there have been 13 in which at least one other death has occurred from the same cause. In the whole 29 families there had been 84 deaths from *consumption*, or about 3 on an average in each. In 16 families there had been two; in 2, four; in 3, five; and in 1 eight. Hence, if a deduction may be drawn from so limited a scale of obs., there is a strong presumption that at least one more death will occur in 45 p.c. of families in which 2 members have already died of that disease—provided of course there are survivors of the ages liable to suffer from it. Secondly, however, the note of caution being given, it will be found on careful inquiry, that in a large proportion of instances in which 2 deaths have arisen from consumption in a proposer's family, there are other objectionable family or personal points which concur to render his life ineligible for assu. . . .

Mr. John Mann, Medical Examiner for the *British Empire Mut.*, in his *Contributions to the Medical Statistics of L. Assu., with Hints on the Selection of Lives*, 1865, says hereon:

> We have placed in the first rank the facts of the family hist., because until of late years they have been the most neglected; judged to be of minor importance, and down to the present time we often meet with cases in which they are utterly ignored—even by men who are intelligent well-educated members of the medical profession. . . . We account for this in part by remembering that the special illustrations of hereditary disease which present themselves in masses to the medical officers of the life assu. co. occur to the ordinary practitioner only in individual instances, and at more distant intervals. In part also because the conclusions that are forced upon the mind by the study of family hist. are often opposed to the wishes, affections, and personal interests of the student himself.

In the hist. of the *Brit. Empire Mut.* up to that date, 67 deaths had occurred from phthisis. The result of an analysis of the family hist. in each case was this—that these deaths in relation to the question of hereditary descent might be divided into 3 classes. 1. Those in whom this was more clearly estab. by the death of one or both parents from phthisis. To this class belonged 21 cases. 2. Those who might be classed as *doubtful*, because there was strong ground for suspicion that the fact was essentially the same, but that a different name had been given to the disease; or it had been hidden under some misleading description; or attributed to some irrelevant incident or accident; or that it was connected with some correlative disease. To this class were attributed 23 cases. 3. Those cases the hist. of which, *as contained in the office papers*, afforded no evidence at all of a suspicious character. Many found in this class would be properly trans. to the other classes if all the facts had been clearly available. In this class 23 cases remained.

These 3 classes embraced 26·07 p.c. of the whole number of deaths in the first decennium of the So.; "but in consequence of their early emergence they make up 77·25 of our losses, that is, of years deficient of the respective expectancies of these classes." Mr. Mann adds:

> When we moreover consider, that prob. not less than two-thirds of these were deaths from inherited disease, *we can conceive of hardly any demonstration that could be more impressive than is afforded by these facts, of the pre-eminent importance of family hist. as an element in the examination and analysis of the value of each life proposal.*

Dr. Adams Allen, in his *Medical Examinations for Life Ins.*, 5th ed. 1869, speaking of *Insanity*, says:

> The family hist. first calls attention to the point, as it is well recognized as one of the most commonly transmissible of affections. It is safe to say that in from one-third to one-half of all cases of obvious insanity, its presence in the family within three generations can be traced. If those slight aberrations of mind, or eccentricities, which from absence of existing causes, do not deepen into such mania as requires treatment, were taken into account, the proportion would certainly be largely increased.

It should be remembered in this connexion that the Registers of the Gen. Registry Office, Somerset House, have now been sufficiently long in force—over a generation—to render them available for many of the inquiries suggested by the authorities here passed in review. [CONSTITUTIONAL DISEASES.] [CONSUMPTION.] [HEREDITARY DISEASES.] [MEDICAL SELECTION.] [PHYSICAL CONSTITUTION.]

FAMILY INSURANCE.—The best aspect of Life Ins. is its adaptability as a means of provision for families; but that is not the sense in which we now speak of Family Ins. There have from time to time been special attempts to adapt the principle to family requirements. The early "Widows and Orphans" funds were of this character.

A Select Parl. Committee on F. Sos. sat in 1825, and to that Committee Mr. Francis Corbeaux, a well-known and able writer on V. Statis. at that period, submitted the plan of a proposed "Inst. for the Economic Endowment of Unborn Children, especially Females." It embraced the following considerations: 1. The number of *female* children issuing from each marriage; which, after reviewing various available statistics to be reviewed in our art. FECUNDITY, he estimated at two. 2. The number who attain the age of 21 "accomplished years" out of any given number of children born alive. This he found very difficult of ascertainment—the Mort. T. differed materially, and he admitted that "there exists unquestionably great differences in the results relative to the various classes of people." The results before him showed 121 *females* to 100 marriages; but he thought the true proportion would be 105·425. The proportion of males would be less. [FEMALE LIFE.] "No inconvenience can therefore arise from endowing the male children on the same terms as the female; which indeed may be done with add. profit." 3. As to the prob. period at which, on an average, the sums contracted for will become payable to the parties. He considered, in view of obs. made, that the first child would be born on the average 2 years after marriage; and that 3 other children would be subsequently born at intervals of 2 years each. Dealing with half the children only, he thought they would complete their majority, on an average, 26 years after marriage; but for safety he assumed 25. 4. The husband's age at the date of marriage—for upon that turns the prob. of the period of his surviving to pay the prems. He assumed 28 years as the average; but took 30 as a ground of safety. 5. In case the payment of prems. was to cease on the life of either the husband or wife dying, this introduced another element of calculation. He thought that the average age must be taken at 28 for both parents. 6. If for safety this last age be taken at 30, and the value of the joint lives or any interest in them was taken by the *Northampton* T., with option to the parties to discontinue the payments either on relinquishing the benefit of the contract, or submitting to a reduction of the endowments originally stipulated for, the transaction would appear to be safe.

In his work: *On the Natural and Mathematical Laws concerning Pop., Vitality, and Mort.*, etc., 1833, he reverts to the subject (chap. xxiii.), and reviews further data relating thereto, more especially as regards the ratio of births in France; while in chap. xxiv. he applies mathematical formulæ to the elucidation of several of the problems involved. Indeed, he devises an hypothesis of gradually decreasing power of fecundity, passing through a period of 24 years in the case of early marriages. [FECUNDITY.] As the result of another investigation, he found that after 8 years and 2 months from the date of marriage, future ann. prems. might "equitably be resolved into a single payment,"—int. 4½ p.c. (p. 155). In chap. xxix. he approaches the subject more directly; it is, "Of inst. founded on an application of the law of mort.; and, in particular, of an inst. for assuring at the time of marriage, endowments to the issue therefrom." He says at the close of the chap.:

> . . . The writer of these pages has employed many years in the maturing the plan of an inst. on the economic principle of mut. assu. for providing *at the time of marriage*, and in behalf of the children to be born thereof, sums payable on their attaining any agreed year of age; varying the contributions according to the wife's age at marriage, and supplying optional modes of their discharge. The average of births in expec. at each specific age of marriage being contracted; the proportions to each other, of all births, male and female; the proportions of individuals belonging to either sex, who, amongst any quantity of births, attain the respective ages at which the endow. may be rendered available; an average period computed from the time of marriage, and to which all births may be referred; lastly, the ratio of int. according to which any accumulation of cap. may safely be assumed; are requisite elements from which the principal T. have been computed towards equitably regulating all transactions of the above description; and it is seen by the foregoing chapters, that those elements are susceptible of determination with sufficient accuracy. *The general object of that concern is to guard large families from the vicissitudes of fortune, and females particularly against a precarious dependence; as also to relieve the solicitude of parents contemplating a numerous offspring—the orig. contract providing for each child in whatever number.* The beneficent provision will then be obtained at less cost than through a transaction of life ins., and possess the advantage of not requiring the previous death of a parent. The moral tendency of this proposed inst., together with the permanent benefit it is intended to confer, cannot fail at length to be appreciated; and from these benefits extending to all classes, the highest will find an equal inducement to join in the *Prospective Endowment Asso.*

An intimation by way of note is added, that "it would not be inconsistent with the author's views to devolve that concern on four, or more, among the leading asso. in the British metropolis for ins. of lives;" or proposals "for honourable co-operation with him" in forming an independent asso. were invited.

We do not find any further direct trace of the proposal; which had received at able hands an amount of elaboration rarely bestowed.

The *Family Endowment* So. 1835, propounded, as we have seen, a scheme for the endowment of families, irrespective of the number of children—may it not have been the preceding, with change of name?

The *Female Provident* Asso. Co. 1855, embodied a scheme of provisions for unmarried daughters.

The *General Accident and Compensation* Co. 1855, devised a scheme under which the parents and a family of children not exceeding 8, being under 21 years of age, might be ins. to receive £1000 on the death by *accident* of any of them by paying £18 p.a.

The *British Legal* Life, etc., founded in Glasgow, 1863, had a scheme for Family Ins., of which we have given such details as we could obtain in our hist. of that Asso.

The *National* Life has been contemplating a comprehensive system of Family Ins. It has resolved itself into a scheme of endowment on the now customary plans, but at reduced rates. [ENDOWMENTS.]

FAMILY PHYSICIAN.—See MEDICAL ATTENDANT.

FAMILY PROTECTION LIFE ASSU. SO.—Projected in 1848, and the title regis., but the scheme did not proceed further. The title is a good one.

FAMINE.—A people may suffer from either of several causes, as—(1) from not having money to purchase food, or merchandize to barter; (2) by being surrounded with an enemy, and all supplies of food thus cut off; (3) by reason of the non-production of the soil of their country, on which they usually rely for food products. It is in this latter sense that we here deal with the subject.

Famine, *i.e.* failure of food supply, arises from various circumstances, as defective agriculture; fluctuating seasons; and the withdrawal of the accustomed labour in consequence of war, invasion, etc. Also from diseases incident to the principal articles of food.

These causes being mostly local, the consequences may be averted in several ways, viz. by storing the surplus grain of abundant years; by facilities of transport, etc. Hence it arises that with an improving civilization, the severity of famine will be considerably abated; and by means of water storage and irrigation, may, in the countries which have heretofore suffered most, be averted.

Another consideration may be noticed. Where the people of a country subsist usually on high-priced cereals—as wheat, which is the most expensive of all to cultivate,—they can, in the event of scarcity, fall back upon cheaper kinds of food, as rice, etc. But where the people habitually live on the cheapest food, they rarely have the resources in times of scarcity for purchasing the higher-priced food. It should be the duty of statesmen and governments to consider these questions.

It is a physiological fact that zymotic disorders of novel and destructive types are generated among communities which sustain periodical famine. The death of numbers from these causes leaves a larger proportion of the food supplies to the survivors. In the East famines have been epidemic; the West, with a greater abundance of food, has been scourged by the consequences which flow from them. But the West, by supplying the Eastern nations with food, may, hereafter, escape these scourges. Here the doctrine of compensation works in a circle.

The influence of famine upon the pop. of the world is usually regarded from the standpoint of the death-rate alone. It is certain, however, that the *birth-rate* is equally affected. This will be made apparent in a T. to be given under art. FOOD. Hence the fear of over-pop. may be generally disregarded.

In 1749 Dr. Thomas Short, M.D., pub. *General Chronological Hist. of the Air, Weather, Seasons, Meteors, etc., in sundry places at different times*, wherein he reviews the famines and dearths which have afflicted the world. He remarks [vol. ii. p. 376] that among the signs of an approaching dearth are several years of luxuriant crops in succession. Malthus observes hereon [*Pop.* 7th ed. p. 257]: "This obs. is prob. just; as we know that the gen. effect of years of cheapness and abundance is to dispose a great number of persons to marry, and under such circumstances the return to a year merely of an average crop might produce a scarcity."

It has not unfrequently been contended that the countries most subject to famine are those in which the pop. usually makes the most rapid progress. To this it has been answered—that the progress of the pop. being more rapid than that of the means of subsistence, famines are a necessary consequence; hence the Malthusian theory—limit the pop. to the resources of the country. This is in opposition to modern free-trade principles. What Malthus does say (7th ed. 1872, p. 256) is:

> Of the other great scourge of mankind, famines, it may be observed that it is not in the nature of things that the increase of pop. should absolutely produce one. This increase, though rapid, is necessarily gradual; and as the human frame cannot be supported even for a short time without food, it is evident that no more human beings can grow up than there is provision to maintain. But though the principle of pop. cannot absolutely produce a famine, it prepares the way for one; and by frequently obliging the lower classes of people to subsist nearly on the smallest quantity of food that will support life, turns even a slight deficiency, from the failure of the seasons, into a severe dearth; and may be fairly said, therefore, to be one of the principal causes of famine.

He remarks also upon another well-known fact, and that is, the rapidity with which even old States recover from the desolations of war, pestilence, famine, and the convulsions of nature:

> The traces of the most destructive famines in China, Indostan, Egypt, and other countries, are, by all accounts, very soon obliterated; and the most tremendous convulsions of nature, such as volcanic eruptions and earthquakes, if they do not happen so frequently as to drive away the inhabitants or destroy their spirit of industry, have been found to produce but a trifling effect on the average pop. of any State.

In the D. of Sett. of the *Atlas* Ins. Co., founded 1808, among the causes enumerated to justify a temporary suspension of the payment of claims, is included that of *Famine*. [ATLAS INS. CO., HIST. OF.]

In 1843 the Rev. Rob. Everest, Chaplain to the East India Co., contributed to the *Statistical Journ.* a short paper: *On the Famines that have devastated India, and on the prob. of their being periodical.* The author says:

> In comparing the devastating effects of drought, which I have more than once witnessed in India, with the accounts of similar calamities in the hist. of that country, it occurred to me that no one had ever ascertained whether, in that part of the world, such unfavourable seasons had anything like a periodical occurrence. For the purposes of such an inquiry, it was impossible to refer to meteorological registers for a long series of years, as no such documents existed. The only alternative, therefore, was to examine the prices of corn for as far back as they could be obtained; assuming that they would roughly indicate the character of the seasons. In support of this course it may be remarked that the harvests are but triflingly affected by other atmospherical circumstances than moisture and dryness. Of heat and sunshine there is always sufficient to bring the crops to perfection.

He then indicates the sources from which he had drawn information, and gives the principal results as follows:

> Great irregularity was observable in any one list; but the more numerous the lists were from which the averages were taken, the greater was the approximation to a regular ascending and descending series, with recurrences at about 8 or 10 years' distance, leading to the belief, that if we could obtain a correct measure of the average atmospheric changes over a considerable surface of the earth, instead of those only of particular localities, we should be able to observe something like regular

intervals in the seasons. . . . Assuming that the variations in price follow the variations of the seasons as to dryness and moisture, it was to be expected that analogous variations might be observed in the depths of large inland seas, such as the Caspian and the Lakes of North America. . .

He found on consulting such authorities as were available to him, that in the great lakes of America there is a rise for 3 years, and then a corresponding decline; but this was not altogether uniform, for sometimes the succession of similar seasons extended to 5 and even 10 years.

In 1846 Dr. Farr read before the Statistical So. of Lond. a paper on: *The Influence of Scarcities and of the High Prices of Wheat on the Mort. of the People of England.* This paper, which is replete with statistical and other information of value, will fall to be spoken of more particularly under our art. FOOD; but we shall avail ourselves of some important facts drawn from it in the preparation of our T. of Famines given at the close of this art. The author says: "I some time ago examined nearly all the English chroniclers and historians, from Bede and the Saxon Chronicle down to Stow and Holingshed, and extracted all the passages in which scarcities, famines, or epidemics are mentioned." We intend to take a wider range, and look into other countries than England: for in truth famines more or less seriously affect the pop. of a large portion of the entire world. The following passages are appropriate to our present art. They refer to *England* only:

In the 11th and 12th centuries a famine is recorded every 14 years on an average; and the people suffered 20 years of famine in 200 years. In the 13th century my list exhibits the same proportion of famine, and nearly the same number of years of famine; the add. of 5 years of high prices makes the proportion greater. Upon the whole, the scarcities decrease during the 3 following centuries; but the average from 1201 to 1600 is the same—namely, 7 famine, and 10 years of famines in a century. *This is the law regulating scarcities in Eng.*

The destruction of grain, of which famines are the results, arises from "bad seed-times," "long and severe winters," "droughts," "incessant rains during summer or harvest," "tempests," "oppression of the cultivators of the soil," and zymotic diseases of the wheat plant—a great variety of phenomena generally produced by causes beyond our knowledge and control, but subject to laws which systematic agricultural statistics will unfold.

The collection of the obs. loosely made by the chroniclers, on no well-considered uniform plan, but extending over several hundred years, not only establishes the existence, but indicates the nature of these laws.

The Reg.-Gen. in his 9th Rep., pub. 1849, said:

As statistical science and education advance, the severity of seasons of distress—whose general course can be calculated—will be diminished by mutual aid; and provision will be made in prosperity against their recurrence: as the losses of shipwreck, fire, and life to society are mitigated by the various classes of Ins. Knowledge will banish panic and mitigate pain.

Buckle, in his *Hist. of Civilization*, 1857-61, says:

Those frightful famines by which Europe used to be ravaged several times in every century have ceased; and so successfully have we grappled with them, that there is not the slightest fear of their ever returning with anything like their former severity. Indeed, our resources are now so great that we could at worst only suffer from a slight and temporary scarcity; since in the present state of knowledge, the evil would be met at the outset by the remedies which chemical science could easily suggest.

At the Social Science Congress held at Manchester, 1866, Major-Gen. Sir Arthur Cotton read a paper on *Famines in India, their Causes and Remedies*, wherein he gives some important statistical information. Regarding the loss of property consequent upon these Indian famines, Col. Smith had estimated it in 1860 at 3¼ millions sterling. Of the loss of public revenue, the Commissioners estimated that in the 18 years following 1833, in Guntoor alone, there was a loss of £900,000. The writer said one reason assigned for these famines was the want of water; but there was no such want in India. When Guntoor lost 200,000 by famine, a river was flowing through it which never failed, and which in a single day carried to the sea 4000 million cubic yards of water; and as 6000 cubic yards will secure a crop of rice on an acre, water enough was running to waste in that one river *in a day*, in that very district, to secure 700,000 acres of rice, the food of 2½ millions of people for a year. A single day's water would thus provide food for five times the whole pop. of that district. *The sole cause of the famine was that the water was not distributed over the land.* There was indeed food in abundance in other parts of India; but there arose the difficulty of transit. The irrigating canals might be made available to overcome this difficulty— so that the storage of water would meet and overcome a double difficulty. He showed that in many districts the works required might easily be carried out at a profit.

In 1873 Mr. W. Tayler read before the East India Asso. in Lond. a paper, *Famines in India; their Remedy and Prevention.* This paper is pub. in the *Trans.* of the So., and is remarkable for the great practical knowledge it displays.

In view of references from other parts of this work, we propose to construct a T. of *Famines*, made up from all available authentic sources. It will be found that famines, pestilences and earthquakes frequently accompany each other. In St. Matthew xxiv. 7: *There shall be famines, and pestilences, and earthquakes in divers places.* Again, in St. Luke xxi. 11: *And great earthquakes shall be in divers places, and famines and pestilences; and fearful sights and great signs there shall be from heaven.* [EARTHQUAKES.] [PLAGUES.]

Famines of the World—Chronological Table.

B.C.	The Scriptures speak of several famines which have been in Palestine and in the neighbouring countries, as that in the time of Abraham (*Gen.* xii. 10), and again in the time of Isaac (*Gen.* xxvi. 1).
1708	*Egypt*—The seven years famine (*Gen.* xli. 27) began this year.
493	*Rome*—Visited by a famine.
436	*Rome*—Famine. Thousands of people threw themselves into the Tiber.
A.D.	
6	*Rome*—Famine.
10-15	*Ireland*—A general fruitlessness, giving rise to famine and great mort.
42	*Judea*—" Desolated by a famine."
51	*Greece*—Famine.
54	*England*—Grievous famine.
76	*Ireland*—Great scarcity.
104	*England and Scotland.*
107	*Britain*—From long rains.
119	*Britain*—After a pillar of fire seen several nights in the air.
151	*Wales*—Grievous.
160	*England*—Multitudes starved.
173	*England*—After severe frost and snow.
175	*Rome*—Famine.
192	*Ireland*—General scarcity; bad harvest; mort. and emigration, "so that lands and houses, territories and tribes, were emptied."—First notice of *Emigration.*
228	*Scotland*—" Thousands were starved."
238	*Scotland*—" Most grievous."
259	*Wales*—Thousands were "pined to death."
272	*Britain*—People ate the bark of trees and roots.
288	*Britain*—Famine all through.
298	*Wales*—After a *comet.*
306	*Scotland*—Thousands died; "most grievous and fatal" for 4 years.—(*Short.*)
307	*Asia Minor*—A famine prevailed in Cappadocia.
310	*England*—40,000 perished. [Short gives this in A.D. 338.]
336	*Syria*—Also plague.
370	*Phrygia*—Awful famine.
381	Among the *Goths* "terrible."
410	*Rome*—Followed by a plague.
434	*Italy*—Famine.
439	*Britain*—After a *comet.*
450	*Italy*—When parents ate their children.—(*Dufresnoy.*)
466	*Britain*—" And bad fatal air."—(*Short.*)
475	*Northern Nations*—A famine, partly from locusts.
480	*Scotland*—After a *comet.*
484	*Africa*—From drought.
515	*Britain*—" Most afflictive."
520	*Venice*—A famine. The city relieved by Theodoric the Great.
523	*Scotland*—" Terrible."
527	*North Wales*—Famine.
531	*South Wales*—And a small plague.
535	*Ireland*—Destruction of food and scarcity, lasted 4 years.
537	*Scotland*—Dearth; also in *Wales.*
538	*Italy*—Great famine.
547	*Italy*—Famine.
576	*Scotland*—" Fatal."
590	*England*—From a tempest that raised a great flood.
592	*England*—Drought from 10th January to Sept.; and locusts.
600-4	*France*—Famine.
605	*England*—From heat and drought.
625	*Britain*—Grievous.
664	*Ireland*—Great famine preceding second appearance of *Buidhe Chonnaill.*
667	*Scotland*—Grievous.
669	*France*—Great famine.
„	*Ireland*—Great scarcity, and in following year.
680	*Britain*—From 3 years' drought.
683	*Syria and Libya*—Famine.
695	*England* } Famine and pestilence during 3 years—"so that men ate each other."
700	*Ireland* }
703	*Italy*—Three years' famine.
712	*Wales*—Famine.
718	*Syria*—Famine.
730	*England, Wales, and Scotland*—Great famine.

746	*Wales*—Dearth.
748	*Scotland*—Famine.
759	*Ireland*—Great famine throughout the kingdom: and more or less for several years.
768	*Ireland*—Famine and an earthquake.
772	*Ireland*—Famine from drought.
774	*Scotland*—"With plague."
791	*Wales*—Grievous.
792	*Scotland*—Dearth.
793	*England*—"After many meteors;" and in other parts of the world.
803	*Scotland*—"Terrible."
822-3	*England*—"Thousands starve;" also in *Scotland* according to *Short.*
824-5	*Ireland*—Great dearth.
836	*Wales*—"The ground covered with dead bodies of men and beasts."—(*Short.*
845	*Bulgaria*—Great famine.
850	*Paris*—Famine prevailed.
851	*Italy and Germany*—Famine.
856	*Scotland*—A 4 years' famine began.
863	*Scotland*—With a plague.
868	*Paris*—Suffered again from famine.
872	*England*—"From ugly loccusts."
873	*Paris*—Suffered again from famine.
879	*Universal* famine prevailed.
883	*Italy*—"Terrible."
887	*England*—"Grievous 2 years."
890	*Scotland*—Great dearth.
895-7	*Ireland*—Famine from invasion of locusts.
896-9	*Paris*—This city again suffers from famine.
898	*France*—"Sore" famine.
900	*England*—Famine.
931	*Wales*—Famine.
932	*France*—Famine.
936	*Scotland*—After a comet; 4 years, "till people began to devour one another."—(*Short.*)
945-6	*France*—Famine.
946	*Italy*—"Shocking."
954	*England, Wales and Scotland*—Great famine which lasts 4 years.
962	*England*—Famine caused by frost.
963-4	*Ireland*—An intolerable famine—"so that parents sold their children for food."
968	*Europe*—Chiefly *Germany* and *Scotland.*
969	*England*—"All grain burnt by the winds."—(*Short.*)
975	*Paris*—A great number of inhabitants carried off by famine.
,,	*England*—Famine scoured the hills.
976	*England*—This was the "great famine"—*micla hungor.*—(*John of Brompton.*)
987	*Albania*—Dearth.
988	*England*—From rains and barren land.
989	*England*—"Grievous, from a rainy winter; bad spring; neither ploughing nor sowing; snowy harvest."
1004	*England*—"Such a famine prevailed as no man could remember."
1005	*England*—"This year was the great famine in England." Sweyn the Dane quits in consequence.
1008	*Wales*—Attended with plague.
1012	*England*—*Germany*—Endless multitudes died of famine.
1016	*Europe*—Awful famine throughout Europe. "Hails, thunder, and lightning."—(*Short.*)
1025	*England*—From rains; and plague.
1031	*England*—From great rains and locusts.—(*Short.*)
1035	*Byzantine Empire*—Visited by famine.
1042	*England*—About this time such a famine came on that a sextarius of wheat, which is usually a load for one horse, sold for 5 solidi and more.—(*Henry of Huntingdon.*) Lasted 7 years.
1047	*Ireland*—Great famine and snow; also in *England* from snow and frost.
1050	*England*—Great famine and mort.; from barrenness of the land.
1051	*Mexico*—Famine which caused the Toltecs to migrate.
1053	*England*—Famine after a comet—lasted 2 years.
1058	*Poland*—Grievous famine.
1064	*Egypt*—Another terrible famine, which lasted 7 years. The people driven to terrible expedients.
1068	*England*—Famine and plague after a severe winter.

1069	*England*—Normans desolated England, and in the following year famine spread all over England, "so that man, driven by hunger, ate human, dog, and horse flesh;" some to sustain a miserable life sold themselves for slaves.
1073	*England*—Famine followed by mort. so fierce that the living could take no care of the sick, nor bury the dead.—(*Henry of Huntingdon.*)
1078	*Constantinople*—"From the multitudes of strangers."—(*Short.*)
1080	*Denmark*—Famine.
1086	*England*—A great murrain of animals, and such intemperate weather that many died of fever and famine.—(*Henry de Knyghton.*) Excessive rains.—(*Short.*)
1087	*England*—Pestilence followed by famine; great suffering.
,,	*Denmark*—King Olaf II. surnamed the "Hungry," in consequence of famine in his reign.
1093	*England*—Great famine and mort.—(*Stow.*)
1096	*England*—"Heavy-timed hunger that severely oppressed the earth."—(*Saxon Chronicle.*) Summer rain, tempests, and bad air.—(*Short.*)
1099	*England*—Famine from rains and floods.
1100	*Antioch*—Famine.
1106	*England*—From barren land; then plague.
1111	*England*—Winter long and very severe; great scarcity followed.
1116	*Ireland*—Great famine, "during which the people even ate each other."
1117	*England*—From tempest, hail, and a year's incessant rains.
1120	*Jerusalem*—"Plague of mice and locusts."—(*Short.*)
1121-2	*England*—"Great famine from long and cruel frosts."
1123-4	*France and Germany*—Famine from terrible weather; "greatest plague."—(*Short.*)
1124	*England*—"Such a famine prevailed that everywhere in cities, villages, and cross-roads lifeless bodies lie unburied."
1125	*England*—Great flood on St. Lawrence's Day; famine in consequence of destruction of crops, etc.
1126	*England*—Incessant rains during the summer, "when followed in all England a most unheard-of scarcity. A sextarius of wheat sold for 20 shillings."
1130-1	*Rome*—Great famine.
1135-7	*England*—Great drought and famine.
1141	*England*—Famine, said to have lasted 12 years.—(*Short.*)
1146	*France*—Famine.
1151-2	*Europe and Palestine*—Famine.
1153	*Ireland*—Great famine raged in Munster, and spread all over Ireland.
1154	*England*—From rains, frost, tempest, thunder, and lightning.
1157	*Italy*—After great snow and frost.
1162	Said to have been a great famine all over the *world!*
1175	*England*—Pestilence followed by great dearth.
1176	*Wales*—A great famine and mort.
1183	*England* and *Wales*—A great famine severely afflicted both England and Wales.
1188	*Ireland*—Great scarcity of food in North of Ireland.
1193-6	*England, France*—Famine occasioned by incessant rains. "The common people (*vulgus pauperum*) perished everywhere for lack of food; and on the footsteps of famine the fiercest pestilence followed, in the form of an acute fever."—(*Walter Hemingford.*)
1200	*Ireland*—"A cold, foodless, year."
,,	*Egypt*—Famine of great severity from deficient rise of the Nile.
1203	*England*—A great mort. and famine, from long rains.
,,	*Ireland*—A great famine—"so that the priests ate flesh meat in Lent."
1209	*England*—Famine from a rainy summer and severe winter.
1224	*England*—A very dry winter and bad seed-time, whence followed a great famine.
1227	*Ireland*—A great famine throughout the country.
1230	*Rome*—After a deluge of the Tiber.
1235	*England*—Famine and plague; 20,000 persons die in London; people eat horse-flesh, bark of trees, grass, etc.—(*Short.*)
1239	*England*—Great famine, "people eat their children."—(*Short.*)
1243	*Hungary*—Great famine from Tartar invasion.
1248	*Germany*—Famine.
1252	*England*—No rain from Whitsuntide to Autumn; no grass; hence arose a severe famine; great mort. of man and cattle; dearness of grain and scarcity of fruit.
1257	*England*—The inundations of autumn destroyed the grain and fruit, and pestilence followed.
1258	*England*—North winds in spring destroyed vegetation; food failed, the preceding harvest having been small, and innumerable multitudes of poor people died. 50 *shiploads of wheat, barley, and bread were procured from Germany;* but citizens of Lond. were forbidden by proclamation against dealing in same.
1262	*Ireland*—Great destruction of people from plague and hunger.

1268	*Sicily*—Terrible famine; also in *Vienna*.
1271	*England*—A violent tempest and inundation, followed by a severe famine in the entire district of Canterbury.
,,	*Ireland*—Pestilence and famine in the whole of Ireland.
1281	*Poland*—Famine.
1286	*England*—*Short* speaks of a 23 years' famine commencing this year.
1289	*England*—A tempest destroyed the seed, and corn rose to a great price.
1294	*England*—Severe famine; many thousands of the poor died.
1295	*England*—No grain or fruits, "so that the poor died of hunger."—(*Camden*) Hail, great concussion of elements.—(*Short.*)
,,	*Ireland*—Great dearth during this and the previous and following years.
1297	*Scotland*—"Calamitous" famine.
1299	*Persia* ravaged by famine and pestilence.
1302	*England*, *Scotland*, *Ireland*—Famine.
1315	*England*—Grain spoiled by the rains. Famine "so dreadful that the people devoured the flesh of horses, dogs, cats, and vermin." Parl. attempted to fix prices; and failed.
,,	*Ireland*—Famine and various distempers.
,,	*Thuringia*, *Poland*, *Silesia*—Lasted years in *Lithuania*.
1316	*England*—Universal dearth, and such a mort., particularly of the poor, followed, that the living could scarcely bury the dead. Royal proclamation: no more beer to be made.
,,	*Ireland*—Great dearth. Eight captured Scots eaten at siege of Carrickfergus.
1317	*Ireland*—A great famine throughout the country in consequence of Bruce's invasion.
1321	*England*—Famine again; this is regarded by some writers as the last serious famine in this country.
1332	*Ireland*—A peck of wheat sold for 22*s*.
1335	*England*—Famine occasioned by long rains.
1336	*Scotland*—Desolated by a famine,
1337	*China*—A famine occasions a pestilential epidemic.
1339	*Ireland*—A general famine.
1341	*England*, *Scotland*—Great dearth in this and following year. People ate horses, dogs, cats, etc., to sustain life.—(*Holinshed.*)
1350	*Barbary*—Grain exported from *England*, causing dearth here.
1353	*England*, *France*—Great famine.—(*Rapin.*)
1361	*Poland*—Famine.
1369	*England*—Great pestilence among men and larger animals; followed by inundations and extensive destruction of grain. Corn very dear.
1374-5	*Italy*—Famine.
1390	*England*—Great famine arising from scarcity of money to buy food.
1392	*England*—Great scarcity for 2 years; people ate unripe fruit, and suffered greatly from "Flux." The Corp. of Lond. advanced money and corn to the poor at easy rates.—(*Stow.*) *Short* attributes the famine of these 3 years to the "hoarding of corn."
1410	*Ireland*—"A great famine."
1427	*England*—Famine from great rains.
1429	*Scotland*—Dearth.
1433	*Ireland*—Famine of great severity.
1437-8	*England*—Wheat rose from its ordinary price of 4*s*. to 4*s*. 6*d*. per quarter to 26*s*. 8*d*. Bread was made from fern-roots.—(*Stow.*) Rains and tempests.—(*Short.*)
1440	*England*—A scarcity. *Scotland*—A famine.
1442	*Sweden*—A famine.
1447	*Ireland*—Great famine in the spring.
1486	*England*—"Famine sore."
1491	*Ireland*—Such a famine that it was called "The Dismal Year."
1497	*Ireland*—"Intolerable famine throughout all Ireland—many perished."
1521	*England*—Famine and mort.
1522	*Ireland*—A great famine.
1523	*England*—Severe famine.
1528	*Venice*—Famine.
1540	*Sardinia*—The island desolated by a famine.
1545	*England*—A wonderful dearth and extreme prices.
1549	*England*—Famine from neglect of agriculture.
1556-8	*England*—Famine from great rains, bad and inconstant seasons; heat and long south winds.—(*Short.*)
1563	*London*—Famine and pestilence said to have taken off 20,000 people.
1565	*British Isles*—Extended famine.
1581	*Persia*—Desolated by famine and plague.
1586	*Hungary*—Famine.

1586	*Ireland*—Extreme famine consequent on the wars of Desmond. Human flesh said to have been eaten. Also in *England.*
1588-9	*Ireland*—Great famine period, "when one did eate another for hunger."
1591	*Italy*—Famine.
1594	*England and Hungary*—Famine.
1595-6	*Italy, Germany, etc.*—Famine.
1598	*Pegu*—Very severe.
1600	*Russia*—Famine and plague, of which 500,000 die, and 30,000 in Livonia; also in *England,* "cold, dry summer."—(*Short.*)
1601-3	*Ireland*—Great scarcity and want. Cannibalism again reported.
1610	*Dresden*—Visited by famine.
1630	*England*—Dearth; bread made of turnips, etc.
1649	*Scotland and North of England*—"From rains and wars"; also following year.
1650-1	*Ireland*—A famine throughout the country. Sieges of Limerick and Galway.
1656	*Rome*—Famine for 2 years.
1690	*Ireland*—Famine and disease.
,,	*Italy*—From rains.
1693	*France*—Awful famine.—(*Voltaire.*)
1694-9	*Scotland*—Famine; *England*—great dearth, "from rains, colds, frosts, snows; all bad weathers."—(*Short.*)
1700	*England*—From rain and cold of previous year.
1709	*France*—A severe famine throughout the kingdom.
,,	*Scotland*—From rain and cold; also in *England.*
1711	*Carniola*—Famine from rain and mildew; continued several years.
1727-9	*Ireland*—Corn very dear. "Many hundreds perished." Emigration.
1739	*France*—A severe famine.
1739-40	*Ireland*—Potatoes destroyed by frost; wheat 42*s.* per kilderkin.
1740-1	*England*—"From frost, cold, exporting and hoarding up corn."—(*Short.*)
1741	*Scotland*—From "terrible shake-winds when corn was ready for reaping." [—(*Short.*)
1748	*England*—Extended famine.
1765	*Ireland*—Great scarcity; distilling and export. of corn prohibited by Act of Parl.
1770	*Bengal*—Devastated by famine; "one-third of the pop. reported as perished."
,,	*Bohemia*—Famine and pestilence said to carry off 168,000 persons.
,,	*Russia and Poland*—Famine and pestilence carry off some 20,000 people.
1771	*Italy*—Failure of harvest.
1775	*Cape de Verde*—Great famine—16,000 people perish.
1789	*France*—Grievous famine; province of Rouen.
1795	*England*—Scarcity of food severely felt.
1799	*Hindostan*—Famine in district of Midnapore.
1801	*United Kingdom*—Great scarcity; flour obtained from America; Committees of both Houses of Parl. were appointed to inquire into means of supplying food.
1803	*Khandesh* (*Hindostan*)—A famine carried off a large number of the pop.
1810	*India*—North-west Provinces; from 2 to 8 p.c. of the pop. died; 90,000 in one central district alone.
1812	*United Kingdom*—Great scarcity in England and Ireland.
1813	*Poland*—Suffered from famine, consequent upon an inundation.
1813-4	*Goojerat* (*Hindostan*)—This province suffered from severe famine.
1822	*Ireland*—Dreadful famine, produced by failure of potato crop.
1831	*Ireland*—Famine; Parl. granted £40,000 for relief; £74,410 subs. in Eng.
1832	*Madras*—Famine in district of Guntoor; about 200,000 perished.
1845	*Ireland*—Famine; the Gov. expends £850,000 in relief of sufferers.
1846	*Belgium*—Severe famine; but relieved from supplies from neighbouring countries.
1846-7	*Ireland*—Great potato famine; Parl. advanced nearly £10,000,000; about 275,000 persons are supposed to have perished. The famine in the whole lasted over nearly 6 years; the pop. became reduced by about 2,500,000. The emigration to America was 1,180,409, and 1,029,552 are said to have died from starvation and pestilence consequent upon it. This is prob. overstated. It is further said that about 25 p.c. of the emigrants died within 12 months of leaving.
1861	*India*—Famine in North-west Provinces; failure of crops; thousands starved. Subs. in Eng.
1866	*Bengal*—Awful famine in Orissa; 1,500,000 reported to have perished.
1871-2	*Persia*—Severe famine.
1874	*Bengal*—Famine arising from drought. The Gov. took early measures, and at a cost of £6,500,000 organized a system of relief. About 1,000,000 tons of rice were carried into the distressed districts; and about 100,000 remained after relief concluded.
1874-5	*Asia Minor*—Severe famine; great efforts made by Turkey to alleviate; also subs. raised in Eng. Deaths up to July, 1874 (*Times,* 31 Mar. 1875), 150,000.

[We fear this T. must not be regarded as complete; but the materials lie scattered; and further time and attention may yet be spent upon it. It is a nucleus.]

The following special literature on Famines may be consulted by those who desire to pursue the subject further.

1584, by John Udall: *The true Remedie against Famine and Warres; five Sermons vpon the first chap. of the Prophecie of Joel.*

1586, printed by Christopher Barker: *Orders deuised by the Especial Commandment of the Queene's Majestie for the Reliefe and Staie of the present Dearthe of Graine within the Realme.*

1593, by the same: *The Renewing of certaine Orders devised by the speciall Comandements of the Queene's Majestie for the Reliefe and Stay of the present dearth of Grain within the Realme: in the yeere of our Lord* 1586; *now to be again executed this year* 1594, *vpon like occasions as were seene the formere yere: with an addition of some other particular Orders for Reformation of the great abuses in ale-houses, and such like.*

1597, Peter Baker pub. (prob. a sermon): *The Prophecy of Agabus, concerning Famine.*

1595, Jerom Benzoni pub. in Venice: *Tractatus de Fugâ, in quo explicatur quid Principes et Rectores Ecclesiastici et civiles debeant agere, tempore pestis, famis, et belli.* 4to.

1596, Dr. William Barlow, Bishop of Rochester and Lincoln, pub.: *Translation of three Sermons on Famine and Dearth of Victuals, by Lavater L.*

Same year there was pub. by — Plates: *Sundrie new and artificial Remedies against Famine.*

1611, Arthur Standish pub.: *The Commons Complaint concerning the Waste of Woods, and the Dearth of Victuals; with four Remedies for the same.*

1627, the Rev. Wm. Gouge pub.: *God's three Arrows, Plague, Famine, and Sword.*

1631, Edward Howe pub.: *A Collection of the most remarkable Dearths and Famines.*

1643, Thomas Nutt pub.: *Nineteen Propositions for the Deliverance of City and Country from fear of Sword and Famine.*

1654, Rice Evans, "a Welsh conjurer," pub.: *Mr. Evans' and Mr. Pennington's Prophesie concerning seven years of Plenty and seven years of Famine and Pestilence.*

1711, the Rev. John Hildrop pub.: *A Treatise of the three Evils of the last Times, the Sword, the Pestilence, and the Famine.*

1763, Charles Churchill, "an English poet of unquestionable genius," pub.: *The Prophecy of Famine, a Scots Pastoral.*

1765, was pub. by Davis: *Authentic Accounts of the price of Wheat, Bread, and Malt, etc.; and also a true relation of Dearths and Famines.*

1796, there was pub. by "W. A.": *Injuries of the Public, the Cause of Famine.*

1800, there was pub. anonymously: *The cause of the present threatened Famine traced to its real source, viz. an actual depreciation of our circulating medium, occasioned by the Paper Currency, with which the War, the shock given to public credit in* 1794, *the stoppage of the Bank in* 1797, *and the Bankruptcies in Hamburgh in* 1797, *inundated the Country to accommodate Gov., and enable the merchants to keep up the price of their merchandise, shewing by an Arithmetical Calculation founded on facts, the extent, nay, the very mode of the progress which the paper system has made in reducing the People to Paupers. With its only apparent practicable remedy.* Jordan, 8vo.

Same year: *A Maximum, or the Rise and Progress of Famine; addressed to the Brit. People.* Wright, 8vo.

Same year, by George Edwards, M.D.: *Effectual means of providing against the Distresses apprehended from the scarcity and high price of different articles of Food.*

1801, by the last-named author: *Practical means of counteracting the present scarcity, and preventing Famine in the future.*

Same year, anon.: *Humane Suggestions to Members of the first Imperial Parl., or an Appeal to the Ministry; being urgent Reasons for Credit and Famine.*

1804, Archibald Duncan, "of the Royal Navy," pub.: *The Mariner's Chronicle, being a collection of the most interesting Narratives of Shipwrecks, Fires, Famines, and other calamities incident to a life of maritime enterprise.* "No. 1, to be completed in 20 Nos., 6*d*. each."

1808, Dr. James Anderson pub. in Madras: *Journal of the estab. of Napal and Tuna for the Prevention or Cure of Scurvy, Dysentery, and Ulcers on Shipboard and Navigation: of Famine on Shore.* [EARTHQUAKES.] [FOOD.] [PLAGUES.] [POPULATION.]

FAMINE FEVER.—Known technically as *relapsing fever*, excited, in certain cases, by a specific poison generated in the system by a state of starvation.

This fever appeared in London in 1868; and again towards the close of 1872, in rather an aggravated form on the last occasion.

In 1869 Mr. James B. Hutchins, of the Medical Department of the Privy Council, prepared a memorandum: *Relapsing fever—sanitary precautions;* which contained (*inter alia*) the following:

1. The greatest personal predisposition to a relapsing fever is given by states of poverty and privation; so much so that the disease is often known by the name of famine fever. Where destitution has not existed, or has been adequately relieved, relapsing fever is not likely to be epidemic.

2. Relapsing fever is in a very high degree communicable from sick to healthy. The more confined the atmosphere in which sick and healthy are together, the more certain is the disease to be communicated.

3. An attack of relapsing fever is greatly less dangerous to life than an attack of typhus. But where relapsing fever has attacked, and when all its acute symptoms are past, the sufferers remain for a while extremely weak, requiring that food and restoratives should be liberally supplied them,

in default of which the feebleness left by the disease may often be of indefinite duration. This is the more important, because, where relapsing fever becomes epidemic, typhus often accompanies or follows it; and the persons whom the relapsing fever has weakened not unfrequently fall victims to typhus.

4. Relapsing fever is eminently a disease which cannot safely be treated in the houses of the poor; for in them, crowded and ill-ventilated as they generally are, and with inmates often insufficiently nourished, there must be every likelihood that the infection will spread. It is essential that under such circumstances the sick should at once be removed from amid the healthy. Ample hospital accommodation is therefore an indispensable condition for limiting the extension of the disease.

FAN-SPREADER.—A contrivance consisting of a lever fitted on the nozzle of a fire-engine branch, by which the form of the stream of water may be changed, or spread out, simply by the pressure of the thumb upon the lever. It was invented by Mr. Wm. Baddeley in 1842.

FARCY.—A disease of the horse, which affects the lymphatics of the skin; either generally producing a distended appearance of the vessels like moles or buttons, when it is called the *bud*, or *button farcy*; or locally, when it is confined to dropsical accumulations in the legs, and is called the *water farcy*. Both forms of disease are contagious, and difficult to cure. It is a variety of *glanders*.

FARINACEOUS.—A term for all those substances which contain farina, viz. the cerealia, legumes, etc.

In 1849 there was pub. by John Smith, of Malton: *Fruits and Farinacea the proper food of man; being an attempt to prove, from history, anatomy, physiology, and chemistry, that the original, natural, and best diet of man is derived from the Vegetable Kingdom.* 2nd ed. [FOOD.]

FARINGDON, NEAR ALTON, HAMPSHIRE.—Some obs. on the "Parish Registry" of this place, between the years 1720-40, were prepared by Dr. Stephen Hales, the incumbent of the parish. These will be referred to in some detail under MORT. OBS.

FARLEU.—Money paid by copyhold tenants in lieu of a heriot. It is often applied to the best chattel, as distinguished from heriot, the best beast.

FARMERS (AGRICULTURAL).—These are, as a class, remarkable for longevity. Of 12 classes of persons included in T. given in the 14th Rep. of the Reg.-Gen., *Farmers* are the oldest, and the longest livers. Out of 225,747 there were 31,720 of the age of 25 and under 35; 48,378 of the age of 35-45; and 53,608 of the age 45-55. Their numbers then decline, and there were 45,585 of the age 55-65; 28,660 of the age 65-75; 11,363 of the age 75-85; and 1711 of the age 85 and upwards. Their numbers, depending on the number of farms, have been prob. nearly stationary for some years in England; and it is evident that men enter the class at all ages up to 45-55, when the number living is greater than the number in any other period of life. Few become farmers after that age. The total deaths in the year 1851 were 6426; and the deaths to 1000 living at each of the decennial ages, commencing with 35-45, were nearly as follows: 35-45, 9; 45-55, 12; 55-65, 25; 65-75, 55; 75-85, 148; 85 and upwards, 324.

The deaths to 1000 labourers at each of the corresponding ages were 13, 17, 29, 68, 174, and 418. The advantages in respect to health of the farmers over the labourers are considerable at every age after the age of 35; but singularly enough, the mort. of the young farmers of the age 25-35 is rather higher (10·15) than the mort. (9·79) of the young labourers of the same age.

The longevity of farmers has also been noted in the U.S. In an address delivered by Dr. Nathan Allen to the Farmers Club at Princetown, Massachusetts, 1871, it was stated that, according to the registration rep. of deaths in Massachusetts, pub. for about 30 years, and preserved with more completeness than anywhere else in the country, the greatest longevity was found to obtain in agricultural life. In the ten different occupations as given in these rep., the cultivators of the earth stand as a class at the head, reaching, on an average, the age of nearly 65 years, while that of the next class, merchants, is only about 49 years; that of mechanics of all kinds about 48 years; and that of shoe-makers about 44. [OCCUPATIONS.]

FARMERS AND GENERAL FIRE AND LIFE INS. AND LOAN AND ANNU. CO.—Founded in 1840, with an authorized cap. of £500,000, in 50,000 shares of £10. In the same year it obtained a Special Act of Parl.—3 & 4 Vict. c. xcv. In 1844 its name was changed to the ROYAL FARMERS, under which title we shall give its complete hist.

FARMERS AND GRAZIERS MUT. CATTLE INS. ASSO., "for the Ins. of Horses and Cattle against all Diseases and Accidents."—Founded in 1844, by Mr. Wm. Shaw and others, concerned in the then management of the *Royal Farmers*. Its especial object was "to give to farmers, graziers, and owners of cattle, the best means of protecting themselves against losses by those diseases and accidents which they can neither foresee nor control, but which have hitherto been most injurious and often ruinous to thousands."

In 1853 the Asso. ceased to carry on bus. in consequence of severe losses, and there being no share cap. to fall back upon, some of its claims were never discharged.

FARMERY.—The buildings and yards necessary for carrying on the bus. of a farm, or agricultural holding. The buildings in the aggregate are usually insured as "Farm Buildings, consisting of, etc.," naming the more important.

FARMING STOCK INS.—Fire ins. upon agricultural produce and implements, as distinguished from the buildings on farms, are thus designated. These ins. usually embrace 3 heads. 1. The *harvested* produce of the crops, but not the *growing* crops themselves (unless specifically insured), nor the fences, hedges, or plantations. 2. The live stock on the farm as against fire risks, the amount on any one animal being limited to a sum named in the pol. 3. The various implements and utensils of husbandry belonging to the insured, made use of on the farm. This does not cover locomotive steam-engines, nor fixed machinery, unless specifically named. The broad distinctions are between *Live and Dead* Farming Stock.

The farm buildings are usually insured separately, even where they belong to the occupier.

Various exceptions are usually inserted in pol. of this class: as, that produce injured or destroyed by spontaneous heating, or stacks placed within 100 yards of a railway, are not covered by the ins.; that losses from drying hops or barley; losses through the process of malting; or losses through any manufacturing process carried on on the farm, are not included. There are frequently special exemptions regarding *steam-threshers*; as complete isolation from buildings, and straw, fodder, etc., and as to the use of artificial light.

It is usual for all agricultural ins. to be made subject to the *average clause;* otherwise, as the value of the stock in hand at different seasons of the year varies greatly, there would be a strong temptation to the farmer to keep himself habitually under-insured. [AVERAGE CLAUSE.]

Formerly the prem. for the ins. of farming stock was very low; but introduction of lucifer matches, and of steam machinery, has added very much to the hazard attending this class of risks, and the prems. have increased accordingly. Incendiarism, too, has frequently been very rife in various parts of the country, and it is especially directed towards risks of this class.

In September, 1825, on the occasion of the *Globe* reducing its rates for other risks, the following announcement was made: "But farming stock, if ins. without specification, will still be charged 2*s.* p.c. If the sum is specified on stock in each building and in each stock-yard, with an average clause, it may be reduced to 1*s.* 6*d.* p.c."

In 1833 an important circumstance transpired with regard to farming stock ins. The Government, in view of meeting the discontent which then largely prevailed among the agricultural interest, *repealed the duty on all* agricultural ins. of the class already defined. Previously these had been chargeable with the same duty, and subject to the same pol. stamps, as other fire ins.

The Act by which this change was authorized is the 3 & 4 Wm. IV. c. 23—a compound Act, including among its objects this particular one. It says (s. 5): "And whereas it is expedient to exempt from the duties imposed by law on ins. from loss by fire all ins. on agricultural produce, farming stock, and implements of husbandry, in Gt. Brit. and Ireland respectively." This it does as from 24 June, 1833, but required all such ins. to be made by a distinct pol. The stamp on the pol. as well as the duty was given up.

Under the last-named Act the fire offices were bound to make separate returns of all sums ins. on farming stock. Thus has been furnished some valuable information, which we shall put into tabular form before concluding this art.

As nearly as could be ascertained, the amount of farming stock ins. in force in the U.K. in 1833 was 36¼ millions stg. In 1834 it stood at about 37¼ millions, no very great immediate increase, but the progress was more rapid afterwards. (See 1862.)

The duty of 3*s.* p. £100 on farming stock amounted to nearly the *third of a penny* upon every 20*s.* in value of the crops, and added nearly 1*d.* to the price of a quarter of wheat when sold at 60*s.*

The following is a return of the amount of farming stock ins. in force by the several *English* ins. offices in 1834:

		£
1.	Norwich Union	8,080,890
2.	County	5,194,386
3.	Sun	3,801,766
4.	Royal Exchange	3,109,545
5.	Phœnix	2,862,371
6.	Suffolk Alliance	1,917,275
7.	Protector	1,588,555
8.	Yorkshire	1,403,478
9.	Kent	1,024,486
10.	Essex and Suffolk ...	955,963
11.	West of England	671,313
12.	Guardian	664,745
13.	Globe	633,648
14.	Salamander	615,951
15.	Atlas	614,983
16.	Birmingham	507,255
17.	Essex Economic	496,553
18.	Alliance...	372,145
19.	British	311,602
20.	Newcastle-upon-Tyne	281,167
21.	Salop	280,342
22.	Hants, Sussex, and Dorset ...	239,690
23.	Manchester	237,687
24.	Norwich Equitable (new) ...	229,633
25.	Imperial...	200,035
26.	Union	190,029
27.	Leeds and Yorkshire	177,445
28.	Leicester & Midland Counties	137,830
29.	Sheffield...	89,520
30.	London Assu. Corp.	55,465
31.	Bath Sun	49,670
32.	Westminster	21,410
33.	Bristol	20,905
34.	District (Birmingham)	6,720
35.	Bristol Union	4,527
36.	Hand-in-Hand	2,125
37.	Bristol Crown	1,000
	Total sum insured	£37,211,603

The first return of farming stock ins. in *Ireland* was made for the year 1835, and showed the following results:

Irish Offices.	£
British and Irish	18,225
National	15,850
Patriotic	7,900
Hibernian	5,020
	£46,995
English and Scotch Offices.	
Royal Exchange	22,130
Atlas	13,285
Alliance	10,160
County	8,845
Caledonian	7,263
West of England	6,650
English and Scotch Offices (continued).	£
Protector	6,630
Sun	6,100
Imperial	5,550
Globe	4,700
Manchester	3,925
West of Scotland	2,100
Leeds and Yorkshire	2,000
Scottish Union	1,970
Union	1,550
Phœnix	1,210
York and North of England	1,000
Norwich Union	400
Total sum insured	£152,463

The first return of farming stock ins. in the several Scotch offices was made for 1837, and gave the following as the sums ins. in the respective offices:

		£
1.	Scottish Union	820,083
2.	North British	481,031
3.	Ins. Co. of Scotland	377,306
4.	Hercules	295,776
5.	Caledonian	283,841
6.	Friendly	225,666
7.	Forfarshire, Perthshire	212,961
8.	Aberdeen	210,197
9.	North of Scotland	190,202
10.	Metellus	155,055
11.	County and City of Perth	104,906
	Total	£3,357,024

The rate of prem. for farming stock ins. began to show an upward tendency about 1844. Previously it had been for many years at 2*s.* p. £100 insured. In July, 1844, it was increased to 3*s.*; in May, 1850, to 4*s.*, with an extra 1*s.* per £100 for use of steam-threshing machinery. In Dec. 1853, the rate was reduced to 3*s.* (with the extra 1*s.* for steam-threshers). In July, 1856, it was again increased to 4*s.*; and in March, 1859, it was further increased to 5*s.*; but this included the use of the steam-thresher, which, by that time, had become general. The effect of these changes may in some degree be seen from the following T.; but other causes, as abundant harvests, or the reverse, cause fluctuations.

Where the *average clause* was introduced into the pol. (for the practice was then exceptional), the rates just quoted were reduced, sometimes to the extent of one-third; but the farmers rarely availed themselves of this reduction. Finally, the fire offices had to combine, and insist upon the *average clause*.

The following return of the amount of farming stock ins. in English offices in force in 1844 shows the decennial progress since the return of 1834; also the changed order of progress among the different offices; and the new competitors.

		£
1.	Norwich Union	9,913,994
2.	Sun	7,999,046
3.	County	6,987,309
4.	Phœnix	4,812,617
5.	Royal Exchange	4,470,963
6.	Farmers and General	3,398,543
7.	Yorkshire	2,955,919
8.	Suffolk Amicable	2,320,285
9.	Essex and Suffolk	1,194,460
10.	Atlas	1,027,161
11.	Globe	1,003,709
12.	Kent	980,095
13.	West of England	921,542
14.	Imperial	839,821
15.	Birmingham	617,698
16.	Essex Economic	616,247
17.	Alliance	596,794
18.	Salop	500,659
19.	Guardian	430,252
20.	Leeds and Yorkshire	424,586
21.	Newcastle-on-Tyne	424,040
22.	Manchester	399,471
23.	Notts and Derby	288,385
24.	London Assurance	270,309
25.	District (Birmingham)	257,027
26.	Norwich Equitable	246,171
27.	Union	242,815
28.	Hants, Sussex, & Dorset	210,426
29.	Protestant Dissenters	197,890
30.	Sheffield	63,798
31.	Church of England	56,230
32.	Shropshire	44,830
33.	Liverpool	28,900
34.	South of England	27,930
35.	Westminster	27,125
36.	Licensed Victuallers	24,500
37.	Hand-in-Hand	16,900
38.	Leicestershire	15,840
39.	Burnley Mutual	3,025
40.	Preserver	250
	Total	£54,927,572
	The farming stock ins. in force in *Scotland* at same date amounted to	4,272,555
	Ditto in *Ireland*	523,129
	Total in U.K.	£59,723,256

The following decennial return shows the progress of farming stock ins. with the *Scottish* Fire Offices in 1847:

		£	s.	d.
1.	Scottish Union ...	927,625	10	0
2.	North British... ...	738,151	0	0
3.	Caledonian	487,815	0	0
4.	Ins. Co. of Scotland	434,112	0	0
5.	Friendly...	398,809	0	0
6.	Aberdeen	396,479	10	0
7.	Hercules...	395,105	0	0
8.	North of Scotland ...	337,118	0	0
9.	National	282,729	8	6
10.	Forfarshire & Perthshire	192,935	0	0
11.	Bon accord...	49,580	0	0
12.	Morayshire...	40,267	10	0
13.	Western	15,680	0	0
	Total	£4,696,406	18	6

The *County* Fire made out a special schedule of its losses on farming stock during the first 11 months of 1853, which was as follows:

No. of Fires.	Cause.	Amount of Loss. £	s.	d.
49	Incendiary	5214	6	11
17	Lightning	181	5	10
22	Children and others playing with lucifers...	1211	18	10
2	Steam threshing-machines	430	0	0
38	General	1781	19	9
128	Total...	8819	11	4

The amount of farming stock ins. the Co. then had in force was about 7 millions stg.; the above claims were for 11 months only.

The following is the decennial return of farming stock ins. in force in 1854 in the *English* offices:

		£
1.	Norwich Union	9,178,366
2.	Sun	7,924,677
3.	County	9,064,936
4.	Royal Farmers	4,402,112
5.	Royal Exchange	4,333,941
6.	Phœnix	4,316,266
7.	Yorkshire	3,033,985
8.	Alliance...	2,635,198
9.	West of England	1,310,408
10.	Essex and Suffolk ...	1,284,599
11.	Atlas	1,180,084
12.	Globe	1,073,129
13.	Kent	1,060,512
14.	Lincolnshire	892,542
15.	Imperial	852,461
16.	Manchester	702,439
17.	Birmingham	686,722
18.	Salop	522,233
19.	Unity	505,260
20.	Leeds and Yorkshire ...	503,708
21.	Provincial	463,419
22.	Newcastle-on-Tyne ...	443,174
23.	Notts and Derby	408,718
24.	Essex Economic	345,132
25.	Guardian	342,075
26.	Shropshire and N. Wales	337,285
27.	North of England ...	318,747
28.	London Assu.	310,306
29.	Liverpool and Lond. ...	308,753
30.	Union	290,674
31.	District	277,056
32.	Norwich Equitable ...	261,786
33.	Royal	240,976
34.	Hants, Sussex, and Dorset ...	170,028
35.	Law	142,818
36.	General	97,055
37.	Equitable	70,520
38.	Lancashire	70,060
39.	Monarch	59,601
40.	Westminster	59,150
41.	Defender	56,740
42.	Anchor	55,408
43.	National Provincial	52,179
44.	Sheffield...	51,750
45.	Law Union	36,885
46.	Times	34,116
47.	Athenæum	33,960
48.	Church of England	25,391
49.	Legal and Commercial ...	25,194
50.	Hand-in-Hand	19,935
51.	Beacon	9,430
52.	London and County	8,950
53.	Durham and Northumberland	4,050
54.	British Prov....	2,700
55.	Era	1,900
56.	National Guardian	1,530
57.	Cambrian Universal	960
58.	Protestant	250
	Total	£58,902,257
	Farming stock ins. in force in *Scotland* same date ...	5,299,394
	Ditto in *Ireland*	609,807
	Total in U.K.	£64,811,458

The following is the return of the several *Scotch* offices in 1857—number reduced to about one-half:

		£	s.	d.
1.	Scottish Union ..	1,652,615	10	0
2.	North British ...	1,166,131	0	0
3.	Northern	1,071,615	0	0
4.	Caledonian	767,596	0	0
5.	Scottish Provincial	629,868	0	0
6.	National	492,262	10	0
7.	Forfarshire & Perthshire	132,470	0	0
	Total .	£5,912,558	0	0

In 1862 the amount of farming stock ins. had increased to $65^{6}/_{10}$ millions—being in 28 years an increase of $76^{3}/_{10}$ p.c.; or about $2^{7}/_{10}$ p.c. annually. The rate of increase in ordinary fire ins. during the same period had been 108 p.c.; or $7^{3}/_{10}$ p.c. annually. From this it was argued that the repeal of the duty had been a failure. This, however, was hardly a fair inference. Agricultural ins. are limited to the produce of our country; and nearly all available land had, long prior to the repeal, been brought under cultivation. In other ins., largely made up of mercantile risks, the produce of the whole world comes in greater or less proportion to our shores; and hence there was no real ground of comparison. Besides, as we have seen, the rate of prems. had risen to nearly or quite double; and this had produced some restrictive influence.

The following is the decennial return of farming stock ins. in force in 1864 in the *English* offices:

	£		£
1. Norwich Union	10,428,219	31. Leeds and Yorkshire	255,432
2. Sun	8,817,625	32. Law Union	187,425
3. County	7,823,975	33. General	177,709
4. Royal Farmers	4,556,191	34. Law	147,076
5. Phœnix	4,349,973	35. Queen	121,083
6. Royal Exchange	4,242,305	36. North British Mercantile	101,364
7. Liverpool and London	3,986,400	37. Commercial Union	97,640
8. Yorkshire	3,484,914	38. Western	67,120
9. Alliance	3,022,754	39. London and Lancashire	61,295
10. Provincial	1,849,816	40. Hants, Sussex, and Dorset	49,500
11. Royal	1,735,039	41. British Nation	46,753
12. Essex and Suffolk	1,556,893	42. Hand-in-Hand	41,180
13. West of England	1,510,702	43. Church of England	22,395
14. Atlas	1,341,756	44. City and County	18,929
15. Midland Counties	1,340,707	45. Hercules (No. 3)	8,087
16. Kent	1,135,505	46. Prince	7,575
17. Manchester	1,011,865	47. European	7,502
18. Birmingham	783,130	48. Home and Colonial	5,550
19. Imperial	740,758	49. Emperor	4,345
20. Notts and Derby	725,770	50. Birmingham Alliance	2,340
21. Salop	600,051	51. Friend-in-Need	755
22. London Assu.	468,622	52. Mercantile Union	275
23. Guardian	420,705		
24. Shropshire	356,568	Total...	£69,455,003
25. Lancashire	317,950	Farming stock ins. in force	
26. Westminster	305,815	in *Scotland* same year ...	6,563,937
27. District	293,996	Ditto in *Ireland*	1,151,535
28. Globe	279,928		
29. Union	275,165	Total in U.K....	£77,170,475
30. Norwich Equitable	256,428		

The Select Parl. Committee on Fire Protection, which sat in 1867, directed some portion of its inquiry to the subject of farming stock ins.; and we draw the following items from a large mass of evidence.

In the *North British*, in 1866, the experience was as follows: On farm-buildings 20 fires; in 12 of them the cause could not be discovered. On farming stock ins. there were 28 losses, in 12 of which the cause could not be ascertained; in 3 of them there was no doubt in the minds of the officials of the office that there was incendiarism; 11 of the losses were from lightning.

The *Norwich Union*, which ins. over 10 millions of farming stock, said that in 3 years the number of fires arising from the careless use of lucifer matches alone was 133, involving payments of £13,462, and applying the same ratio of loss to other offices ins. farming stock, the loss to the whole from this one cause alone would be £30,000 p.a. This office had *one-seventh* of the entire amount of farming stock ins. effected in the U.K. at that date.

Mr. Fletcher, Sec. of the *Sun* F., said: "There are heavy periods of agricultural fires, and there are light periods of agricultural fires. Sometimes the crime is on the increase, and sometimes it drops off again." "I do not think that the cases of incendiarism have increased lately in the country." "Large fires have been occasioned by the careless use of steam threshing-machines." "Many fires which are attributed to incendiarism in the country I am satisfied are occasioned by the farmers themselves." On the other hand he also said: "I have met with several instances where tramps have not only set fire to ricks from a trifling cause, but where ricks and other property have been fired solely for the purpose of obtaining the trifling reward paid for working the engines."

Mr. Swinton Boult, of the *Liverpool and London*; Mr. Percy M. Dove, of the *Royal*; Mr. F. G. Smith, of the *Scottish Union*; and other witnesses having considerable experience in Fire Ins., were called before this Committee. They nearly all concurred in the expediency of an official investigation into the origin of fires. [FIRE INQUESTS.]

The following is the last return for a complete year, 1868, of the farming stock ins. in the several *Scotch* offices :

		£	s.	d.			£	s.	d.
1.	North British ...	2,093,135	0	0	7.	Scottish Commercial ...	73,215	0	0
2.	Scottish Union ...	1,680,967	0	0	8.	Scottish Fire...	70,331	0	0
3.	Northern	1,505,546	0	0	9.	Scottish Imperial... ...	53,796	0	0
4.	Caledonian... ...	1,011,591	10	0	10.	Stewarton, Dunlop, and Fenwick	25,762	0	0
5.	Scottish Provincial	888,892	13	4					
6.	Scottish National	626,419	1	8					
						Total	£8,029,655	5	0

The duty returns for 1868 give the amount of Farming Stock Ins. in the ins. offices of the three divisions of the U.K. as follows : England, £75,419,003 ; Scotland, £8,029,655; Ireland, £320,126 ; Total, £83,768,784. But this must not be taken as any guide to the actual amount of such ins. in the corresponding division, as other figures in this art. have shown. The English offices took ins. in each division of the kingdom ; the Scotch offices ditto. The Irish offices confined their operations more to home ; but only obtained a small portion of the bus. there. The above sum for the Irish offices was apportioned as follows : *Etna*, £180,908; *Patriotic*, £97,802 ; *National*, £41,416.

As from the 24th June, 1869, the duty on Fire Ins. generally (which had been reduced to one-half in 1864-5) was entirely abolished ; and from that date no further returns have been made. It would have been useful if the Gov., in consideration of the boon of the remission of the duty, had stipulated for ann. returns of the sums insured by the several offices, separated into 3 classes,—1. Mercantile ; 2. Farming Stock ; 3. Household and General.

The following T. shows the amount of farming stock ins. in force annually, over the whole period to which the returns extend ; and the increase and decrease therein :

Farming Stock Ins.—*England and Wales.*

Year.	Amount ins.	Increase.	Decrease.	Year.	Amount ins.	Increase.	Decrease.
	£	£	£		£	£	£
1834	37,211,630	...	...	1852	54,780,249	...	154,804
1835	41,389,818	4,178,188	...	1853	56,035,777	1,255,528	...
1836	43,095,228	1,705,410	...	1854	58,902,257	2,866,480	...
1837	44,916,981	1,821,753	...	1855	62,285,976	3,383,719	...
1838	47,870,833	2,953,852	...	1856	65,250,687	2,964,711	...
1839	48,669,028	798,195	...	1857	65,329,849	79,162	...
1840	50,988,016	2,318,988	...	1858	66,490,458	1,160,609	...
1841	52,059,764	1,071,748	...	1859	67,354,979	864,521	...
1842	53,086,797	1,027,033	...	1860	65,963,073	...	1,391,906
1843	55,634,205	2,547,408	..	1861	65,648,041	...	315,032
1844	54,927,573	...	706,632	1862	66,285,102	748,861	...
1845	55,858,637	931,064	...	1863	67,034,505	749,403	...
1846	56,035,561	176,924	. .	1864	69,455,003	2,421,498	...
1847	58,192,056	2,166,495	...	1865	70,280,441	825,438	...
1848	58,873,895	681,839	...	1866	69,914,997	...	365,444
1849	58,292,239	...	581,656	1867	70,648,604	733,607	...
1850	57,162,246	...	1,129,993	1868	75,419,003	4,770,399	...
1851	54,935,053	...	2,227,193				

In 1870 the Central Chamber of Agriculture, in consequence of representations from various parts of the country that the conditions of the fire offices regarding farming stock were oppressive, appointed a Committee to inquire into the subject. From inquiries addressed to 62 different offices, it transpired that 56 insisted upon the *average clause*, and adopted the tariff rates for risks of this class. Six offices were open to take farming stock risks without the average clause. The Committee of the Chamber desired that the average clause should only apply to *three-fourths* of the value of agricultural produce ; but as a condition of this required that the average prices and average crops over a series of years be taken as the basis of the *amount* on which the prem. was to be charged. The offices did not agree. The Committee in its report (1871) urged farmers to ins. corn, hay, and straw in separate pol. from other portions of the stock ; and further urged that the ins. offices should issue "valued pol.," *i.e.* pol. in which the amount to be paid in case of fire had been previously agreed. This last was to meet the difficulty of verifying quantities after a fire.

In view of meeting the case of the farmers, it might be desirable for the fire offices to make special arrangements, by which the sum insured shall periodically decrease from a maximum to a minimun sum—increasing again with the return of harvest. But it is after all much more simple to take out a *specific* pol. for the average value of live and dead stock, and from time to time additional short-term policies to cover increased value after harvest.

It is clear that over a series of years the ins. offices must regulate the prems. they charge for farming stock ins. by the claims arising from them—plus expenses and profit. It is therefore in the interest of the farmers that they aid in a fair and uniform method of assessing the premiums.

The prosp. of the *Belfast Fire Co.*, issued towards the close of 1871, said: "It has been ascertained that not more than 2 p.c. of the total value of farming stock in Ireland is covered by ins., and that the ann. value of the stock *un*insured amounts to over 72 millions stg." The Co. proposed "to modify the rates and conditions for the ins. of agricultural produce so as to meet the requirements of the farming interests of Ireland."

The *County* F. has pub. the following important suggestions regarding farming stock risks:

> *Precautions to be taken against a fire.*—(*a*) Forbid your men to use lucifer matches, smoke or light pipes or cigars, destroy wasps' nests, or fire off guns, in or near the rick-yard, or to throw hot cinders into or against any wooden out-building on the farm, on pain of instant dismissal.—(*b*) Place your ricks in a single line, and as far distant from each other as you conveniently can.—(*c*) Place hay-ricks and corn-stacks *alternately;* the hay-rick will check the progress of the fire.—(*d*) Keep the rick-yard, and especially the spaces between the stacks and ricks, clear of all loose straw; and in all respects in a neat and clean state. The loose straw is more frequently the means of firing, than the stack itself.—(*e*) Have a pond close to the rick-yard, although there may be but a bad supply of water.—(*f*) When a steam thrashing-machine is to be used, place it *on the lee side* of the stack or barn, so that the wind may blow the sparks *away from* the stacks. Let the engine be placed as far from the machine as the length of the strap will allow. Have the loose straw continually cleared away from the engine; see that two or three pails of water are kept constantly close to the ash-pan, and that the pan itself is kept constantly full of water.
>
> *How to act when a fire has broken out in a rick-yard.*—(*g*) Do not wait for the engines, nor for the assistance of the labourers from a distance. Depend entirely upon the immediate and energetic exertions of yourself and your own men.—(*h*) Do not allow the rick or stack on fire to be disturbed—let it burn itself out—but let every exertion be made to press it compactly together, and, as far as is practicable, prevent any lighted particles flying about.—(*i*) Get together all your blankets, carpets, sacks, rugs, and other similar articles, soak them thoroughly in water, and place them over and against the adjoining ricks and stacks, towards which the wind blows.—(*j*) Having thus covered the sides of the ricks adjoining that on fire, devote all your attention to the latter. Press it together by every available means. If water is at hand, throw upon it as much as possible.—(*k*) If engines arrive, let the water be thrown upon the blankets, etc., covering the adjoining stacks, and then upon the stack on fire.—(*l*) Among the numerous hands who flock to assist upon these occasions, many do mischief by their want of knowledge, and especially by opening the fired stack and scattering the embers. In order to obviate this evil, place your best man in command over the stack on fire, desire him to make it *his sole duty* to prevent it being disturbed, and to keep it pressed and watered.—(*m*) Place other men, in whose steadiness you have confidence, to watch the adjoining ricks, to keep the coverings over them, and to extinguish any embers flying from the stack on fire. In order to effect this, it is most desirable that there should be ladders at hand to enable one or two of the labourers to mount upon each stack.—(*n*) If the ricks are separated from each other, and there is no danger of the fire extending to a second, it is of course desirable to save as much of the one on fire as may be possible. That however is not unfrequently accomplished by keeping the rick compactly together rather than by opening it.—(*o*) Send for all the neighbours' blankets and tarpaulins; these are invaluable, they are near at hand, and can be immediately applied.

FARNELL, THOS. W., was Act. and Sec. of *Legal and Commercial* from 1850 down to its amalg., 1857. Had been previously Act. of *London and Provincial Joint-Stock* L.

FARNFIELD, W. H., Sol., pub. in 1875: *The Law of Pilotage on the River Thames.* A valuable little book for shipowners, underwriters, etc. etc.

FARR, WM., M.D., F.R.S., D.C.L., is chief of the Statistical Department of the Eng. Reg.-Gen. Office, Somerset House.

The name of Dr. Farr is, or *ought to be*, well known to every person interested, however remotely, in the progress of L. Ins. or Sanitary Science The able "Letters," or rather treatises, which from time to time emanate from his pen, grace and enliven the otherwise tame and cumbrous reports of the Reg.-Gen. Perhaps there is no man living who has done more to extend the blessings we all most prize—namely, ***health*** and ***long life***. The unmistakeable clearness of his facts, and the cogency of his reasoning, have forced conviction throughout the length and breadth of the land, and the result is seen in the estab. of Boards of Health, the efficient drainage of towns, and supply of pure water, the prohibition of intramural burials, and the providing of public cemeteries, to say nothing of "people's" parks, and model lodging-houses, which are also manifestations of the same spirit of improvement. Future generations will not fail to hold in veneration the memory of one whose almost individual labours, aided and promulgated by the public press, have produced such extended good. It would be no more than justice if the present generation made some more substantial acknowledgment for such services.

It is necessary for the purposes of this work that we review Dr. Farr's labours in some detail.

Dr. Farr has been connected with the Department of the Reg.-Gen. nearly from its commencement. He took office in 1838. In the first Rep. (pub. 1839) of that officer—then Mr. T. H. Lister—we find the following:

> In order that these materials should be available for such beneficial purposes, it was obviously essential that they should be duly arranged. The execution of this task for the first and second quarters has been committed by me to Mr. Farr, a gentleman of the medical profession, whose scientific knowledge and intimate acquaintance with statistical inquiries were ample pledges of his peculiar fitness, and whose letter, including abstracts of the causes of death, and explaining the classification [Statistical Nosology] which has been adopted, I have the honour to lay before your Lordship in the appendix to this Rep.

This was the commencement of that able series of Letters which have now extended over a generation.

In 1837 he contributed to the *British Annals of Medicine* a paper: *On a Method of Determining the Danger of the Duration of Diseases at every Period of their Progress.* In this paper the Science of Prob. is applied to determining the chances of recovery in cases of smallpox; under which head we shall notice it in some detail. The formula is applicable to other diseases; and may be used for scientific observation. [PROBABILITIES.] [SMALLPOX.]

In 1838 he contributed to the *Lancet* a paper: *On Benevolent Funds and Life Assu. in Health and Sickness* [which formed part of a paper previously read before the Council of the British Medical Asso.]. The facts and the reasoning contained herein led to the estab. of the *Medical Invalid* So., under which head we shall give some further details.

Dr. Farr contributed the art. "Vital Statistics" to M'Culloch's *British Empire*, through its several ed., ranging from 1837 to 1844.

In 1841 Dr. Farr was consulted by the Commissioners for taking the Census in that year; unfortunately his recommendations were not adopted; but a retrograde movement was made.

In 1843 he pub., in the 5th Rep. of the Reg.-Gen., the *English Life Table* No. 1, of which we have already given a detailed account. Believing that nothing short of a T. based upon the returns of the entire kingdom would satisfy the requirements of the Ins. offices,—which were then extending their operations into every town and hamlet, and thereby becoming affected by all the influences of occupation and locality,—Dr. Farr undertook the labour of supplying this want. He also gave separate T. for *Surrey*, *Liverpool*, and the *Metropolis*.

In 1849 he pub. in Appendix to 8th Rep. of Reg.-Gen. *The New Northampton Mort. T.*

In 1852 Dr. Farr produced the able *Rep. on the Mort. of Cholera in Eng.* 1848–49, which we have already spoken of and quoted from in our art. CHOLERA. A work of great completeness, extending over some 474 pages 8vo.

During the years 1851–4 he was engaged as one of the Assistant Commissioners for the Census of Gt. Brit. 1851, and contributed the sections bearing upon pop., occupations of the people, conjugal condition, etc.

In 1853 Dr. Farr gave us the *English Life Table* No. 2. Believing that the records of one year's deaths might be too meagre to furnish results sufficiently unchallengeable for the purpose in view, he recommenced his labours, and although adhering to the census report of 1841 as his basis of comparison, he took the deaths of 3 previous and of 3 subsequent years—making, with those of 1841, a period of 7 years of observations—and from this extended data deduced the new series of results, pub. with the 12th Ann. Rep. of the Reg.-Gen.

In 1853, also, Dr. Farr printed for private circulation a pamph. entitled: *A System of Life Ins. which may be carried out under the control of the Gov., and would* (1) *be equitable in its operations;* (2) *afford the best security, and be in the best condition to fulfil its future engagements;* (3) *be well adapted to the wants of the people, as it would afford all the advantages of an ins. office, and some of those of a bank; and* (4) *operate at less risk, less expense, and lower prems. than small offices;* (5) *it might also be made a considerable source of national revenue.* It was this pamph. which led up to the system of "Consols Ins.," as already explained in our art. under that head. [CONSOLS INS.] (See 1865.)

In 1859 Dr. Farr submitted to the Royal So. of Lond. a paper: *On the Construction of Life T., illustrated by a new Life T. of the healthy districts of Eng.* This T. was printed in the *Trans.* of that So., but was afterwards pub. in the 20th Rep. of Reg.-Gen. (1859); and we have already given it under ENGLISH LIFE T.—HEALTHY DISTRICTS. Some T. of annu. values and life prems. deduced from it are given in the 33rd Rep. of Reg.-Gen., pub. 1872.

In 1860 Dr. Farr prepared (1) Rep. on the Programme, (2) Rep. on the Proceedings of the International Statistical Congress held in Lond. in that year. These rep. occupy 2 vols. 4to.

In 1861 Dr. Farr read before the Brit. Asso. at Manchester a paper: *On the Health of the Brit. Army., and the effects of recent sanitary measures on its mort. and sickness.* This paper appears in the *Trans.* of the So., 1861, p. 94. [ARMY.]

During 1861–3 Dr. Farr was again occupied as one of the Assistant Commissioners for the Census of 1861; and he wrote the sections of the Rep.: Civil Conditions; Ages; Occupations, etc.

In 1863 he, in conjunction with Lord Stanley, Lord Herbert, Sir Ranald Martin, and Dr. Sutherland, Commissioners, aided in the preparation of (1) *Rep. on Army Medical Statistics;* (2) *Rep. on the Health of the Army in India.*

In 1864 Dr. Farr pub. in the shape of a distinct work: *English Life T.: T. of Lifetimes, Annu., and Prems., with an Intro. by Wm. Farr, M.D., etc., pub. by authority of the Reg.-Gen. of Births, Deaths, and Marriages in Eng.* The T. herein contained is known as *English Life T.* No. 3, of which we have already given a detailed account. An abstract of the T. and the obs. which accompany it is contained in 28th Rep. of Reg.-Gen., pub. 1867.

In the same year (1864) Dr. Farr was President of the Economical Science and Statistical Section of the Brit. Asso., at its meeting at Bath; and his *Opening Address* will be found in the *Trans.* of the Asso. for that year. It abounds with considerations on subjects of vital interest to our humanity.

In his evidence before the Royal Commissioners appointed in 1864 to inquire into the Condition of Mines in Gt. Brit., Dr. Farr furnished some valuable T., the result of an elaborate inquiry on the V. statis. of miners in the four chief mining districts of E. and W. The substance of the evidence we shall give in our art. MINERS, INS. OF.

In 1865, in view of the Act of the preceding year, authorizing the adoption of a Gov. system of Ins., Dr. Farr prepared a "Memorandum" for the use and guidance of the then Chancellor of the Exchequer in the development of that scheme. The *English Life* T. was adopted as the basis of the Post-Office Ins. scheme. [GOV. INS.] (See 1853.)

In 1866 he contributed to the *Journ. of the Royal Agricultural So. of Eng.* [vol. ii. 2nd series] a paper embodying a scheme for a "General Cattle Mut. Ins. Fund," in which a vast amount of valuable information is contained; and which may yet be utilized.

In 1868 Dr. Farr prepared a *Rep. on the Cholera Epidemic of* 1866 *in Eng.*; which was pub. by way of Supp. to 29th Rep. of Reg.-Gen. From this we have quoted largely in our art. CHOLERA, ASIATIC.

In 1871 Dr. Farr was appointed one of the Commissioners for taking the Census of that year; and was engaged with the other Commissioners down to 1874 in the preparation of the able rep. which are contained in the 4 large fol. vols. pub.

In add. to the preceding, Dr. Farr has read the following papers before the Statistical So. of Lond., and the same will be found in the *Journal* of that So. under the references given:

1841.—*Rep. upon the Mort. of Lunatics.* [vol. iv. p. 17.] The contents of this paper we shall deal with under LUNATICS, MORT. OF.

1846.—*The Influence of Scarcities and of the High Prices of Wheat on the Mort. of the People of Eng.* [ix. p. 158.] [FAMINES.] [FOOD.]

1849.—*Statistics of the Civil Service of Eng., with Obs. on the Constitution of Funds to provide for Fatherless Children and Widows.* [xii. p. 103.] [WIDOWS FUNDS.]

1852.—*Influence of Elevation on the Fatality of Cholera.* [xv. p. 155.] [CHOLERA, ASIATIC.]

1863.—*Rep. of the Official Delegates from Eng. at the Meeting of the International Statistical Congress, Berlin,* 1863. 1. Rep. of Dr. Farr. [xxvi. p. 412.] [INDIA.]

1865.—1. *On Infant Mort., and on the alleged Inaccuracies of the Census.* [xxviii. p. 125.] [INFANT MORT.]

2. *Mort. of Children in the Principal States of Europe.* [xxix. p. 1.] [INFANT MORT.]

1871.—*Inaugural Address delivered by the President, Dr. Wm. Farr,* 21 Nov. 1871. [xxxiv. p. 409.]

1872.—*Inaugural Address delivered by the President, Dr. Wm. Farr,* 19 Nov. 1872. [xxxv. p. 417.]

In add. to the above there must always be kept in remembrance his able Letters in the Annual Reports of the Reg.-Gen. These present masterly researches on hygienic and mortuary statistics, on the construction and improvement of Mort. T., on the demerits of the *Northampton* T., on the conduct and finance of life ins., with an extensive investigation and discussion of practical formulæ, etc. They rank among the most valued contributions to the world's knowledge on these subjects.

It is still to be noted that Dr. Farr has represented Gt. Brit. at the several International Statistical Congresses, which originated in 1851, and have been held at intervals since in various capitals of Europe. He has also given evidence before various Parl. Committees and Royal Commissions, as the Committee on Assu. Asso. 1853; the Royal Commission on Water Supply, 1869; and the Royal Sanitary Commission the same year.

It will be remembered that we have here dealt with the labours of Dr. Farr only so far as they fall within the scope of our present work. He has taken an active part in regard to that important question the intro. of a decimal system of weights and measures; also purchase of railways by the State, etc. He has also been frequently consulted by ins. asso. regarding questions of V. Statistics falling within his range.

Dr. Farr was born in 1807 at Kenley in Shropshire, and is consequently in his 68th year.

FARR'S ENGLISH LIFE TABLE. [ENGLISH LIFE TABLES, NOS. 1, 2, and 3.]

FARR'S HEALTHY DISTRICT LIFE TABLE.—See ENGLISH T.—HEALTHY DISTRICTS.

FARRANCE, G. J., was Act. of *City of Lond.* L. from 1849 to 1854. In 1855 he was Act. of *New Alliance*; 1859 Act. and Sec. of *Public* L.; in 1860 he promoted the *Public Funds* L.; and in 1861 the *Public* F.

FARREN, EDWIN JAMES.—One of the most able writers on Life Contin. which this or any other country has produced

He was trained in the *Asylum* Life, under his father; and on the retirement of the latter, he was appointed Act.; but the Co. was then verging upon the fate which so speedily befell it. [ASYLUM, ETC., LIFE.]

In 1855 he was appointed Act. and Sec. of the *Gresham*, and remained in that position until September, 1864.

In 1844 he pub. *Historical Essay on the Rise and Early Progress of the Doctrine of Life Contingencies in Eng., leading to the estab. of the first Life Assu. So. in which ages were distinguished.* A pamph. full of interest and instruction, from which we frequently quote in these pages.

In 1850 he pub.: *Life Contingency T.* Part I. *The Chances of Premature Death, and the Value of Selection amongst Assured Lives*; a quarto pamphlet of considerable rarity.

In add. to the preceding, the following papers will be found in the *Assu. Mag.* under the references given in each case:

1851.—*On Indirect Methods of acquiring Knowledge; the Method of Hist.; the first T. of Mort.* [vol. i. p. 40.]
,, *Letters on Life Contingency Problems.* [i. pp. 92, 355.]
1853.—*On the Reliability of Data, when tested by the Conclusions to which they lead.* [iii. p. 204.]
,, Letter—*On the Period intervening between the Date of Death and Payment of Sum Assured.* [iii. p. 234.]
,, *On the Form of the Number whose Logarithm is equal to itself.* [iii. p. 323.]
,, Letter—*Proper Expression for the Amount of £1, with the Fractional Part of a Year's Int.* [iii. p. 335.]
,, Letter—*The Chances of Premature Death among Select Lives.* [iv. p. 66.]
,, Letter—*On the Inadequacy of Existing Data for Determining the Rate of Mort. among Select Lives.* [iv. p. 141.]
1855.—*On the Improvement of Life Contingency Calculations.* [v. p. 185.]
,, Letter—*On the Application of the Differential and Integral Calculus to "Int." Questions.* [v. p. 254.]
,, *On the Valuation of Gov. Securities.* [v. p. 310.]
1858.—*On the Improvement of Life Contingency Calculations.* Part II. *The System of Dependent Risks.* [viii. p. 121.]
1859.—Letter—*Professor Silvester's Lectures.* [viii. p. 237.]

Every line written by Mr. Farren is worthy of the attentive study of students.

He gave evidence before the Select Parl. Committee on Assu. Asso. 1853.

In the autumn of 1864 the death of Mr. Farren, suddenly, was reported; this was founded on a misapprehension.

FARREN, GEORGE, Barrister-at-Law (father of the preceding), was one of the founders of the *Economic* Life (1823), and for a short period was its Resident Director. In 1824 he founded the *Asylum* Life, with which his name became more immediately identified; and with which he remained associated for a period of 30 years, or down to the end of 1853. Mr. Farren's change of views after founding an office, in which the *Mut.* system was the prominent feature, to the almost immediate estab. of one which conducted its bus. on a purely proprietary plan, may be noted as remarkable. It indicated an eccentricity of manner which is apparent in many of his writings.

He was the author of the following works, all of which are worthy of attention, notwithstanding that a remarkable sameness runs through several of them.

In 1823: *A Treatise of Life Assu., in which the systems and practice of the leading Lond. Life Institutions are stated and explained, and the statutes and judicial determinations affecting such institutions are brought under review. With an Appendix of cases, including arguments particularly relating to the formation of joint-stock trading cos.*

In 1826: *Observations on the importance in purchases of land, and in mercantile adventures, of ascertaining the rates, or laws of mort. among Europeans, by chronic diseases, and hot climates; on the data necessary for constructing T. to show the prob. duration of a disease; illustrations of the progress of Mania, Melancholia, Craziness, and Demonomania, as displayed in Shakespeare's Characters of Lear, Hamlet, Ophelia, and Edgar; on the comparative danger of first and subsequent childbirths; with an Appendix containing the form of a deed for estab. a joint-stock co. without requiring the aid of Parl. or the incumbrance of an Act to sue and be sued.* 2nd ed. 1852.

In 1828: *Letter to the Earl of Exon on the Rep. of the Finance Committee; wherein he drew attention to the erroneous data upon which the Gov. Annu. were then being granted.* [GOV. ANNU.]

In 1829: *Obs. on the Laws of Mort. and Disease, and on the Principles of Life Ins.; with an Appendix containing Illustrations of Mania, Melancholia, Craziness, and Demonomania, as displayed in Shakespeare's Characters of Lear, Hamlet, Ophelia, and Edgar.* (Privately printed.)

In 1831: *On the Mort. among the Army.* [ARMY.]

In 1832 a tract (privately printed): *Observations on the mortalities among the members of the British Peerage*, wherein the author investigates the average duration of the enjoyment of the title by each peer, from obs. made in 740 cases. [PEERAGE, MORT. OBS. ON.]

In 1838: *The Mort. of Celebrated Musicians, with an Appendix containing brief sketches and anecdotes of some whose works are most generally known.*

In 1844: *The Liabilities of Members of existing and future Public Cos. and Partnerships, after the date of the public Act 7 & 8 Vict. c. 110*, etc., etc.

FARREN'S T. of Mort. for Select Lives.—See Selection.

FASCHINI, Herr.—Editor of the *Versicherungs Zeitung* "Union" in Vienna, a paper devoted to the interests of Ins.

FASHION-Pieces.—In shipbuilding, those timbers which give shape or fashion to the stern, by forming a connexion between the stern-post and the aftermost ribs of the ship's sides.

FASTING.—Fasting comes under two quite distinct categories—voluntary and involuntary. Fasting was a tenet with the early Christians; down to a comparatively late period, it was common to nearly every denomination. Both the Greek and Roman Churches command frequent fasts in their rituals, and in those large portions of the world where Mohammedanism and Brahminism prevail, starving the body in the way of penance is a rule. A meagre diet was a frequent mode of cure among the classical physicians—nay, total abstinence from food was prescribed unsparingly to patients suffering from over-fullness, even in recent times. Nor can we doubt, adds a modern writer, that a course of fasting would in many cases prove more efficacious than medicine. Democritus is said to have subsisted for forty days by smelling honey and hot bread, 323 B.C. Hippocrates remarked that most of those who attempted to abstain seven days died within that period; and if they did not, but were prevailed upon to eat and drink within that period, they still perished. This accords with later obs. Blumenbach says: "A healthy man cannot abstain from food a whole day without great prostration of strength; nor scarcely beyond eight days without great danger to life." [Ed. by *Elliotson.*] Dr. Farr says: "Persons have survived from 11 days to 14 days without food," but adds: "It is important to bear in mind that in total abstinence life is not extinguished immediately, and that in partial starvation the morbid effects may not be developed for some weeks, and that after their appearance the fever burns on, despite of the means employed to assuage it."

Sieges, disastrous campaigns, and shipwrecks have supplied many examples of the effects of forced fasting upon individuals. Müller sums up the effects on the mental condition as follows: "They are feelings of general debility, actual and gradually increasing loss of strength, fever, delirium, and violent passions, alternating with the deepest despondency."

The effects produced by partial and continued privations upon the temper and passions of nations would be a fit subject alike for the statesman and the political economist. No country has, perhaps, suffered so continuously in this respect as Ireland. See T. of Famines in Rep. of Irish Census Commissioners, 1851, from which we have taken only the more important instances in our hist. of Famines. [Famines.] [Food.] [Ireland.]

In 1669 there was pub. by John Reynolds, *A discourse upon prodigious abstinence, occasioned by the twelve months fasting of Martha Taylor, the famed Derbyshire damosell, proving that without any miracle the texture of human bodies may be so altered that life may be continued without the supplies of meat and drink.*

In the *Phil. Trans.* 1684 (Abr. iii. 32) there is an account of the preservation of 4 men in a mine for 24 days without food.

Most of these cases of pretended fasting during unnaturally long periods are simple delusions, ending in imposition.

A religious fanatic who determined (1789) upon fasting forty days died on the 16th. [Abstinence.] [Longevity.] [Temperance.]

FATHER, Insurable Int. in His Child's Life.—The insurable int. which a father has in the life of his child, or *vice versa*, has been the subject of conflicting decisions. We shall review the whole question under Insurable Interest.

FATHERLY So. "for ins. portions upon marriage and upon birth of children."—Founded about 1710. We have given some account of this So. under Birth Ins. The office was in "Knowles Court, in Little Carter Lane, near the East End of St. Paul's Churchyard"—in fact, in Doctors Commons.

FATHOM.—An English measure of length, equal to 6 feet. It is the unit of length in all matters of nautical surveying.

FATIO, Alexandre, pub. at Vevey (Switzerland) in 1778: *Tables d'Intérêts simples et composés à diverses rates; suivies de celles de Mrs de Buffon et Halley sur la mortalité dans les différens âges de la vie, de divers calculs relatifs aux annuités sur des vies, etc.* A very extensive collection of int. T. calculated in *£ s. d. f.*, and followed by a few on mort. and annu.

FAULKNER, David, proprietor and ed. of a pub. assuming to be devoted to ins. interests, and designated *The News*; pub. between 1857 and 1867, and occasionally since. Mr. Faulkner contested Nottingham in 1865. His success was not such as to encourage renewed attempts.

FAULT.—The question of *faults*, as distinguished from fraud or mere negligence, on the one hand, and barratry or wilful damage, on the other, enters into the consideration of contracts of Marine Ins., and sometimes has an important influence over them. Mr. Paton, in his *Compendium of the Law of Ins.* 1862, says, "Apart from fraud of the owners, it is to be kept in view that the underwriters will not be liable for loss under a pol., where that loss has been occasioned by fault of the insured." The following cases will make this point more clear:

In *Bell* v. *Carstairs*, 1811, a neutral or American ship had been employed to take a cargo to an enemy's port. Though there was no warranty or representation of neutrality in the ins., yet as she was captured by the French on the voyage insured, in consequence of having been sent to sea *without the ship's papers to prove her nationality*, this *fault* of the owners being the efficient cause of the loss, it was *held* that the underwriters were not liable. [14 East, 374.]

In *Horneyer* v. *Lushington*, 1811, where a vessel was seized and condemned for carrying simulated papers, contrary to the law of nations, and without having liberty from the underwriters to do so, the underwriters were *held* not liable. The fault of the owners was the efficient cause of the loss. [3 Camp. 85.]

In *Boyd* v. *Dubois*, 1811, it was *held*, that where there is *fault* in placing cargo in a wet or bad condition on board, and that is the efficient cause of the loss, the underwriters will be free. [3 Camp. 132.]

In *Da Costa* v. *Edmonds*, 1815, the pol. was on "40 carboys of vitriol." They were carefully stowed on deck; but caught fire, and were necessarily thrown overboard during the voyage. Carboys of vitriol are sometimes stowed on the deck, and sometimes bedded in sand in the hold, where they are considered safer: hence there was an implied fault in the deck-loading:—*Held*, that the underwriters in this case were liable, although there was no communication to them that the carboys were to be stowed on deck. [DECK LOADS.]

In *Cairns* v. *Kippen*, before the Scotch Courts in 1820, a cargo of oats was insured on board a vessel at and from Limerick to Greenock. In sailing from Limerick the vessel struck the ground in the Shannon, near Tarbert Roads; and instead of going back to examine damage, the captain proceeded at once on the voyage, and in a few hours thereafter the vessel sunk. The jury, in conformity with a direction from Lord Chief Commissioner Adam, found that the loss had occurred through the *fault* and negligence of the master and pilot, and that the underwriters were not liable. [2 Mur. 245.]

In *Thomson* v. *Bissett*, 1826, the master had been guilty of a *fault* in not taking a pilot on board in going out of a harbour of dangerous navigation. This was held to exempt the underwriters.

In *Sadler* v. *Dixon*, 1841, an action on a time pol. for six months, stating a loss by perils of the sea, the defendants (the underwriters) pleaded that although the vessel was lost by the perils of the sea, yet such loss was occasioned wholly by the wrongful, negligent, and improper conduct (the same not being barratrous) of the master and mariners of the ship, by wilfully, wrongfully, negligently, and improperly (but not barratrously) throwing overboard so much of the ballast that the vessel became unseaworthy, and was lost by perils of the sea, which otherwise she would have encountered and overcome. The jury had found in favour of the underwriters on this plea. On appeal now brought in the Exchequer Chamber, it was *held*, that the plea was bad; and that the underwriters were liable for the consequence of the wilful, but not barratrous act of the master and crew, in rendering the vessel unseaworthy before the end of the voyage, by throwing overboard a part of the ballast. [8 M. & W. 895.] [BARRATRY.] [CONSEQUENTIAL DAMAGES.] [DAMAGES.] [MISCONDUCT.] [NEGLIGENCE.] [SEAWORTHINESS.]

FAWCETT, W. T., was Sec. of *Licensed Victuallers* Ins. Co. 1842.

FEALTY.—The vassal-oath of fidelity between the tenant of estates in fealty and his lord. It is the essential feudal bond, and the animating principle of a feud; without which it could not exist.

FEAR, DEATHS FROM.—Fear, when taking the shape of sudden fright, is known to have caused many deaths. But in its milder form it has also been found to be destructive of life. Capt. Tulloch, in a paper read before the Statistical So. of Lond. in 1858, *On the sickness and mort. amongst the troops in the West Indies*, gives the following as a remarkable illustration of the influence of *fear* in inducing fever, as well as of *hope* in repelling it: During the epidemic in 1822, among the 91st Regiment at Up-Park Camp, when an order was issued for their removal to another station, *the fever ceased;* and though the corps was unexpectedly detained for 3 or 4 days after the order was issued, not one case was admitted into hospital during that time. In support of this position he says, "All the medical reports concur in stating how much the susceptibility to fever is increased by fear and despondency." And he adds, by way of further illustration:

> We may easily fancy what must be the feelings of a recruit, when he sees a fourth part of his comrades swept off in the space of a month, as was the case in some of the corps soon after their arrival. We can suppose the apprehension with which he will contemplate the prob. of a similar fate, and how little expectation he will entertain of being among the fortunate survivors. He is thus not only rendered more susceptible of the influence of disease, but goes into hospital scarcely with the hope of recovery; whereas the soldier who has been longer accustomed to the mort. of that country, possesses not merely the advantage of being less apprehensive, and consequently less susceptible, but even if seized with fever will keep up his spirits, and contend against the violence of an attack under which the other would sink.—See ANGINA-PECTORIS.

FEBRICULA.—Literally, a slight fever; a term applied to the febrile state; one of the forms of Continued Fever. It is of slight degree and short duration, frequently running its course in 24 hours. The other forms are *relapsing* fever, *typhoid* fever, and *typhus* fever.

FEBRIFUGE.—A dispeller of fever; a remedy against fever. The term is commonly applied to medicines used in the treatment of ague.

FEBRILE Diseases.—See Fever; Malaria. Also Medical Geography; Zymotic Diseases.

FEBRIS (from the Latin *ferbeo*, to be hot).—Fever, a class of diseases characterized by increased heat, etc. It is termed *idiopathic*, *i.e.* of the general system, not dependent on local disease; or *symptomatic*, or sympathetic—a secondary affection of the constitution dependent on local disease, as the inflammatory. The hectic is a remote effect. [Fevers.]

FECUNDATION (from the Latin *fecundo*, to make fruitful).—Impregnation.

FECUNDITY.—This is a subject which interlaces itself into many of the topics considered in this work, in a variety of forms. We have already anticipated it to some degree in our art. Births; while under Family we deal as it were with the practical results of fecundity. In our art. Famines, again, it presents some obvious considerations; while under Food it has a double significance. The supply, and perhaps the character, of the food of a people affects their fecundity. The fecundity of the people again presses hardly on the food supply. Under Infant Mort., as also under Mort., Law of, we again have fecundity before us. All who are born must die; but with numerous progeny, there is frequently a large proportion of early deaths. While under Pop., Law of, the connexion is obvious enough. Many of the writers on political economy have treated of this subject with ability. [Barrenness.]

It will be remembered, as Mr. Milne pointed out, that the recorded fecundity of a people, as shown in the number of births, is always below the natural aptitude or physical power, by reason of the obstacles to marriage: hence the social condition, and even the political and fiscal conditions, of a country may govern its relative degree of fecundity, as exhibited in its record of births.

It may be further remarked that fecundity of a people will afford no conclusive index of the progress of its pop. The classes who yield on an average the greatest number of children per marriage are frequently placed in circumstances in which a very large infant mort. occurs. The families of consumptive parents are not unfrequently large; but here very often only a small proportion of the children reach maturity.

It may be safely concluded that the countries most favourably circumstanced in regard to fecundity are those in which the industrial classes can find ready employment, and in which the actual necessities of life are abundant. In such countries *early marriages* are contracted: for there is no apprehension of lessening their comforts by the responsibilities of a household.

So far preliminary. We now proceed to review the principal authorities on the subject.

To survey the ancient classic authors on this subject would prob. be attended with small practical result; for there is no stand-point of comparison. We notice that Columella, a native of Spain, who flourished under the Roman Emperor Claudius, A.D. 42, says [lib. iii. cap. 8] that in Egypt and Africa, the bearing of twins was frequent, and even customary. These two countries were then provinces of the Roman Empire, and Columella was likely to be well informed concerning them. We do not see notes by travellers indicating that such great fecundity now prevails. We shall also hereafter see that this is not to be accepted as a test of superior fecundity.

Graunt, in his *Natural and Political Obs.* 1661, 3rd ed. 1665, from which we here quote, makes several quaint remarks on the subject before us in his "Index": "24. Abortives and *stillborn* to those that are christened are as 1 to 20. . . . 35. A disposition in the air towards the plague doth also dispose women to abortions. . . . 39. The more *sickly* the year is, the less fertile of births. . . . 46. That the people in the country double by procreation but in *two hundred and eighty years*, and in London in about *seventy*, as hereafter will be shewn; the reason whereof is, that many of the breeders leave the country, and that the breeders of London come from all parts of the country; such persons breeding in the country almost onely as were born there, but in London multitudes of others. . . . 50. Why the proportion of breeders in London to the rest of the people is less than in the country. 51. That in London there are more impediments of breeding than in the country. . . . 53. Polygamy useless in the multiplication of mankind, without castrations. . . . 73. There are about 24,000 teeming women in the 97, 16, and 10 parishes in and about London. . . . 84. Adam and Eve in 5610 years might have by the ordinary proportion of procreation begotten more people than are now prob. upon the face of the earth. 85. Wherefore the world cannot be older than the Scriptures represent it. 86. That every wedding one with another produces 4 children. . . . 95. The difference also of births are greater in the country than in London"—which leads him to remark, p. 139, that "Healthfulness and Fruitfulness go together."

The Lord Chief Justice Hale, in his *Primitive Origination of Mankind considered according to the Light of Nature*, considers incidentally questions of fecundity, and brings a good deal of learning and ingenuity to bear upon the subject; but we do not propose to follow him here.

In 1682 Sir Wm. Petty pub. his *Essay concerning the Multiplication of Mankind*, etc. (2nd ed.), wherein, among the subjects he considered, were the following: "4. How many men and women are prolific, and how many of each are married or unmarried. . . . 8. A conjecture in what number of years Eng. and Ireland may be fully peopled, as also all America; and, lastly, the whole habitable earth. . . . 10. Whether the speedy peopling of the earth would make—*first*, for the good of mankind; *secondly*, to fulfil the revealed will of God; *thirdly*, to what prince or state the same would be most advantageous. 11. An exhortation to all thinking men to salve the Scriptures, and other good histories, concerning the number of people in all ages of the world, in the great cities thereof and elsewhere."

In the same year he pub. his essay: *Of the Growth of the City of London; and of the Measures, Periods, Causes, and Consequences thereof*, wherein he considers (*inter alia*) the following problems: "1. That London doubles in 40 years, and all England in 360 years. . . . 3. That the periods of doubling the people are found to be in all degrees from between 10 to 1200 years. 4. That the growth of Lond. must stop of itself before the year 1800. 5. A T. helping to understand the Scriptures concerning the number of people mentioned in them. 6. That the world will be fully peopled within the next 2000 years. . . . 10. *That it is possible to increase mankind by generation four times more than at present.*" Regarding this last point he does not enter into any details.

Mr. Gregory King, in his *Natural and Political Obs. and Conclusions upon the State and Conditions of Eng.*, 1696, under "Obs. about Procreation, accounting the people to be 5,500,000 souls," gives as from the "fore-mentioned assessments on marriages, births, and burials, and the collectors' returns thereupon, and by the parish regis.," the following estimate:

People.		Ann. Marriages.					
530,000.	Lond. and the B. of Mort.	1 in 106.	In all	5,000	producing	4	children each
870,000.	The cities and market towns.	1 ,, 128.	,,	6,800	,,	4·5	,,
4,100,000.	The villages and hamlets.	1 ,, 141.	,,	29,200	,,	4·8	,,
	... ...						
5,500,000.	... ...	1 ,, 134	...	41,000	...	4·64	...

His general obs. under this head have already been quoted in our art. BIRTHS, to which the reader should turn.

In 1748 Montesquieu pub. his *Spirit of Laws*, a work which commanded great attention in Europe. He considered the question of Fecundity under various aspects. In regard to *China*, he considered that the climate was peculiarly favourable to the production of children; and that the Chinese women were more prolific than any others in the world. As to Japan, he attributed its populousness to the birth of a greater proportion of females than in other countries; but of this he furnished no proof.

He (Montesquieu), as have some other philosophers, supposed that a fish diet was favourable to the increase of pop.; and that consequently there were more children born in proportion to the marriages in seaport towns and on the coast, than in the inland districts of a country. But this opinion never rested on any solid foundation; and careful investigations in France in the early part of the present century showed that the proportion of births was higher in many of the Inland Departments of France than in the maritime ones. The belief is prob. altogether traditionary: come down from the mythological fiction of Venus being sprung from the sea.

In 1750 Dr. Thomas Short, M.D., pub. *New Observations, Natural, Moral, Civil, Political and Medical, on City, Town and Country B. of Mort.*, etc. He considers the question of fecundity from various aspects, and asserts that poor food and hard labour are conducive to it; and consequently that "the poorest and most laborious part of mankind are the fruitfullest." He even carries this idea so far as to conclude that the most laborious and toilsome months of the year are the most fruitful of conceptions; and attributes the great prolificness of the Israelites in Egypt, as a secondary cause, to their bondage and affliction. He attributes the inferior fecundity of "town breeders," compared with those of the country, as arising, among other things, from the more plentiful eating and drinking and the greater idleness which prevail in populous towns: observing that the most voluptuous, idle, effeminate and luxurious, are the "barrenest."

In 1766 M. Muret contributed to the Memoirs of the Economical So. of Berne a paper on the *Pop. of the Pais de Vaud*, in Switzerland, wherein he speaks of the want of fruitfulness of the Swiss women, and says that in the Canton immediately under notice the baptisms in relation to the inhabitants were only as 1 in 36; while in a neighbouring Province in France the proportion was 1 in 23 or 24; and after considering and endeavouring to account for the fact, he arrived at the conclusion that it was the will of God that the most healthy people should be the least prolific, or, as he expresses it, "That the force of life in each country should be in the inverse ratio of its fecundity." But in some calculations concerning Vevay, which he made for another purpose, he shows that 375 mothers had yielded 2093 children, all born alive; from which it followed that each mother had produced nearly 6 children. But he spoke of mothers—not wives. He afterwards found the barren wives to be 20 out of 478; but this still left the children *per marriage* above 5⅓.

In 1768 Herr Herman presented to the Academy of St. Petersburg a paper [afterwards pub. in *Nova Acta Academiæ*, tom. iv.], wherein is made a comparison of the births, deaths, and marriages in the different provinces of Russia. From a comparison of the yearly marriages and yearly births, he arrived at the conclusion that a marriage in St. Petersburg, in Veronesch, in Vologda, in Archangel, Revel, and the Gov. of Tobolsk, yielded 4 children; while in the Gov. of Moscow, Iver, Novogorod, Pskorsk, Resan, Kostroma, a marriage only yielded about 3 children.

Dr. Price, in his *Essay on the Expectation of Lives; the Increase of Mankind*, etc., submitted to the Royal So., 1769, remarks:

> Healthfulness and prolifickness are prob. causes of increase seldom separated. In conformity to this obs., it appears from comparing the births and weddings in countries and towns where registers of them have been kept, that in the former, marriages one with another seldom produce less than 4 children each: generally between 4 and 5, and sometimes above 5. But in towns seldom above 4; and sometimes under 3.

In his second ed. 1772, he notices the fact that with married couples the males are generally older than the females; and inquires into the duration of married life: "The difference of eight years between the ages of men and their wives, as here taken, is prob. too little" (p. 46). Again: "According to *Dr. Halley's* and the *Northampton* T., a man 40 years of age has an even chance of living no more than 22 years, and of joint continuance with his wife of the same age, 13 years" (p. 66). He afterwards says that he thinks the difference of age at time of marriage must be "at least 12 years;" and the "mean age of all who marry ann. must be supposed to be about 23 and 35," *i.e.* 23 for wives and 35 for husbands (p. 291). "In this case (he adds) 19, as before, will nearly be the expec. of all marriages."

In 1781 Dr. W. Black, M.D., pub. *Obs. Medical and Political*, etc., wherein he states: "High refinement is an obstacle to propagation;" and he advances other points which have since been dealt more efficiently with by other writers.

The great fecundity of the women of *Scotland*, or of certain portions of that country, has been recorded by Sir John Sinclair in his *Statistical Account of Scotland*, 1791-9, a publication of authority. Thus, in the parish of Duthil, in the County of Elgin, the proportion of ann. births to deaths was as 70 to 15, or 4⅔ to 1; while at Nigg, in the County of Kincardine, the account says [vol. vii. p. 194] that there were 57 land families and 405 children, which gave nearly $7^{1}/_{9}$ each; 42 fisher families and 314 children, nearly 7½ each. Of the land families which had no children there were 7; of the fishers none.

At a later period in this art. we give a comparison of the fecundity of Eng. and Scot. as based upon the entire statistics of each.

Nicander gave in 1800 the following T. of the mean number of women in all *Sweden* and *Finland*, with the ann. average number of deliveries, and the proportions delivered ann. at certain ages, for the 16 years ending 1795:

Between the Ages of	Mean No. of Females living.	Ann. average No. of deliveries.	One Woman of	Proportion of 1000 Deliveries.
15 and 20	134,548	3,298	40·8	33
20 ,, 25	129,748	16,507	7·8	165
25 ,, 30	121,707	26,329	4·6	263
30 ,, 35	111,373	25,618	4·3	256
35 ,, 40	97,543	18,093	5·4	181
40 ,, 45	90,852	8,518	10·6	85
45 ,, 50	78,897	1,694	46·5	17
above 50	69,268	39	1776·0	0·4
above 15	833,936	100,096	8·3	1000

It is seen by this T. that the proportion of women delivered ann. between the ages of 30 and 35 is almost twice as great as between 20 and 25, which could only arise from the proportion of the married in the first of these intervals of age being at least so much greater than in the second. Marriages therefore did not take place at very early ages in these countries.

M. Nicander found that of 100,096 women delivered ann., 96,124 were married, and 3972 unmarried. Upon comparing the legitimate births with the married women, and the illegitimate with the unmarried above 15 years of age, he found that 10 married women out of 54, and 10 unmarried women out of 918, were ann. delivered.

The influence of the seasons upon the conceptions was evident, and was not to be explained by the variations in the number of marriages at different seasons of the year. The ann. conceptions were about 4 times as numerous as the ann. marriages; and came twice in a year to a maximum, and twice to a minimum: the maximum periods being June and Dec.; the minimum periods Feb. and Oct. By far the greater proportion of marriages took place in the 3 months of Oct., Nov., and Dec. (See 1861.)

It was in 1798 that the Rev. T. R. Malthus drew attention to the question of Fecundity in attempting to estab. the dogma, since so much discussed by political economists, that unless some artificial check were put upon the increase of pop., the supply of food would become insufficient, and all would suffer the inconvenience and physical deterioration consequent. He appeared to consider that 3 children would be the proper limit of families in Gt. Brit.—two would replace the parents; the other would compensate for premature deaths and for unproductive or unmarried people. It is customary to abuse Malthus, and ridicule his theories. This is a mistake. The extravagance, if not the originality, of his views, by bringing to bear the reflective powers of a number of men on the subjects he discussed, was productive of much good. We do not propose to follow him in any detail here. Under Pop. we shall have occasion to do so. We content ourselves with one or two passages. Thus, he affirms:

> It is prob. that the natural prolificness of *women* is nearly the same in all parts of the world; but the prolificness of marriages is liable to be affected by a variety of circumstances peculiar to each country, and particularly by the number of late marriages. *In all countries the 2nd and 3rd marriages alone form a most important consideration, and materially influence the average proportions.* [7th ed. p. 232.]

Again:

> The fecundity of the human species is in some respects a distinct consideration from the passion between the sexes, as it evidently depends more upon the power of women in bearing children than upon the strength and weakness of this passion. [p. 394.]

Some Parl. returns purporting to exhibit the fecundity of marriages in Eng. during the 30 years 1780—1809 inclusive, gave 2,238,370 marriages, and 7,893,805 conceptions—including illegitimate and still-born. This shows 3·52 children to each marriage, reducible to about 3·15 legitimate; of which 1·60 males, and 1·55 females. Most prob. the number of marriages, as well as the resulting births, are stated too low—mainly on account of inefficient returns. (See 1821.)

By the census returns of 1821 it was recorded that in 1820 the marriages in Eng. had been 81,749, the baptisms 328,190—or 4·01 per marriage; but as some of the baptisms were for illegitimate births—estimated at 8 p.c. of the whole—the proportions were reduced to 3·68; of which 1·88 males, and 1·80 females. These figures may be regarded as more nearly correct than those of 1809.

At the request of a Select Parl. Committee on Friendly Sos. which sat in 1825, Mr. John Finlaison constructed a T. from the registers kept by Dr. Granville as Physician to the Benevolent Lying-in Inst., and Westminster Dispensary, of 876 cases of poor women delivered at their own homes; of which an abstract is here annexed:

T. *showing the effect that the Postponement of Marriage in Females has upon their Annual Fecundity:*

Ages when Married.	Average Births to the Year.
13 to 16	·456,706
16 " 20	·503,610
21 " 24	·520,227
25 " 28	·545,163
29 " 32	·589,811
33 " 36	·776,866
37 " 39	1·125,000

In add. to the 876 pregnancies above named, these same women had given birth to 3966 children (of which 176 were still-born), and had in the course of their marriage experienced 655 miscarriages—of which latter 425 were in the first 3 months, 189 in the next 3 months, and 41 in the last 3 months of pregnancy. Thus there is a total of 5497 conceptions to 876 women still in their child-bearing period—being an average of more than 6¼ each.

M. Benoiston de Chateauneuf, in a paper: *On the Intensity of Fecundity in Europe at the commencement of the 19th Century*, pub. in *Annales des Sciences Naturelles*, tom. ix. 1826, shows great variations in the fecundity; ranging from 6 to 7 children to a marriage in some villages in Scotland, down to his lowest figure of 2·44 for some marriages in Paris.

In 1827 Mr. Francis Corbaux, a well-informed writer, submitted to the Select Parl. Com. on F. Sos. which sat that year a paper or plan of a proposed "Inst. for the Economic Endow. of Unborn Children, especially Females," wherein he reviewed some of the data we have already furnished, and offered criticisms thereon. He considered the proportion returned in 1809 (already given), and says thereon, "A proportion evidently too low even for maintaining a stationary pop." He shows that the returns for Sweden (already given) give of legitimate children to each marriage 1·95 males, and 1·88 females—in all 3·83. "Accurate obs." at Montpellier had shown results slightly lower—females 1·77 born alive to each marriage. In the whole of France the proportions exhibited were 3·5 legitimate births to each marriage—of which 1 72 were females. But he considered the returns of Sweden and Montpellier alone trustworthy. He says:

> Doubtless some remarkable differences exist *between the proportion of children produced by each marriage in the various stations of life;* and it seems generally understood, that the upper classes do not contribute their full proportion towards maintaining any standard of pop.; but the ascertainment of those differences, arising from many causes, may be considered impossible in the present state of information.

The *Bulletin des Sciences Geographiques* for Jan. 1827, contained a very interesting art. *Sur l'Intensité de Fecondité*, by M. Benoiston de Chateauneuf, from which several of the facts stated in the present art. are drawn.

The writer of an able art. in the *Edinburgh Review*, Mar. 1829, after examining various authorities on this subject, and setting forth the sources of error to which such an inquiry is incident, generalizes the results of his investigation into the following para.:

> When, however, these different sources of error are taken into view, and the corresponding correc-

> tions have been made, it is found that the number of births to a marriage in Europe may be taken at an average of about 4 ²/₅. This proportion is not, however, by any means constant, and depends on an immense variety of circumstances, which it is always very difficult, and sometimes perhaps impossible to distinguish and appreciate. In general, it would seem that there is a greater intensity of fecundity in the South of Europe than in the North; though there are many, and some very striking exceptions to this rule. In *Russia*, for example, the number of children to a marriage is as high as 5¼, being one of the highest ratios that has anywhere been observed; while in *Sweden* the proportion is as low as 3 ⁶/₁₀. In *England* the proportion of births to a marriage, as given in the Regis., is as 3½ to 1; or for every 100 marriages, there are 350 births; and adding one-sixth to the number of births given in the Regis. for omissions, which is believed to be near the truth, the true proportion will be 4 births to each marriage. In *France* the proportion is almost the same as in England; or if there be any difference, the proportion in France will, we apprehend, be found rather to exceed ours. In *Holland* the ratio of fecundity is estimated by M. Quetelet at 4½, while, according to the same distinguished authority, it is said to be as high as 5¼ in *Belgium*: a discrepancy for which it is very difficult to account, seeing that Belgium [Holland?] is not only a very thickly peopled, but also a very healthy country.

He came to the conclusion that variations in climate and food did *not* exercise any considerable influence on fecundity. This is not the generally received opinion. He points out, what indeed is obvious enough, that if, in order to determine the fruitfulness of marriages, a particular period, as say 20 years, be selected: among the births at the commencement of this period will be included a number that have sprung from marriages contracted in a previous period; and it is equally plain that a number of the births produced by marriages contracted towards the termination of the period will be included in the births of a subsequent period. If the pop. be stationary, the differences thus to be adjusted will be small. If it be increasing or decreasing, the necessary corrections may be considerable.

In 1830 Mr. Michael Thomas Sadler, M.P., pub.: *The Law of Pop.: a treatise in six books in disproof of the superfecundity of human beings, and developing the real principle of their increase.* A work of great authority. The author says, on the subject before us:

> First, married females do not become fruitful, on the average, during the first year of their nuptials, but nearly so. A great number of cases which I have collected with a view of determining this point, give three-fourths of them as producing their first child at the average of one year after marriage. Second, the interval of time at which the fruitful couples produce their children, calculated from the period of their marriage to the birth of their last child, including the greater prolificness of the first year, exceeds two years. It extends to between 2¼ and 2¾ years, if calculated after the first birth. The last of these facts must be impressed upon the mind and recollection of the reader, as all the T. are constructed upon the presumption of its certainty; and happily it is one which, on this very debatable question, has never been made the subject of controversy, and which does not admit of it. *Nothing is more certain, or better ascertained, than the average periods at which the human female in a state of prolificness reproduces.* Were we, indeed, to form our general rules from particular exceptions, we should in this, as in all other cases, be grievously misled: we might conclude, for instance, that she would continue to multiply within the year: but general computations will rectify any such error, and conduct us to conclusions which are not only reconcilable with philosophy and truth, but resolvable into the ordinations of a merciful Providence. The human mother has to feed her infant for a period pretty nearly corresponding in length to that of gestation (I speak now as it regards the necessity of the great mass of the community, with whom the question evidently rests); nature therefore has kindly ordained, as a general rule, that the period of impregnation shall be postponed till that essential duty is discharged, and for a period somewhat beyond it; and he must be ignorant indeed who does not see most clearly that the health, and indeed, frequently the existence, both of mother and offspring, are secured by this physical regulation of the common Parent of mankind.
>
> The human being, in reference to the term of existence, multiplies later, and at longer intervals, and ceases to be prolific sooner, than any other animated being with which we are acquainted: hence we find on the average, that, in the maternal state, during its period of fruitfulness, the births are not so frequent as once in two years. Even in the rank of society which is absolved from the necessity (though not from the duty) of fulfilling one of the most important of the maternal offices: that of feeding from their own bosoms their infant offspring—and who too often avail themselves of that unnatural immunity: consequently removing what our physiologists regard as one of the physical impediments to an accelerated prolificness—even in this rank I find the births are at intervals of about, but rather exceeding 2 years; that period therefore, as it respects the mass of the community, who are differently circumstanced in this respect, cannot be shorter.

He concludes by saying that arguments and proofs on this point are unnecessary—no writer ever having ventured upon supposing a shorter period than two years possible; and even Sir Wm. Petty, when labouring to prove the possibility of "a doubling every 10 years for a century after the flood," amongst his other suppositions, "so extravagant if applied to the present era," only lays it down that "every teeming woman can bear a child once in two years."

According to Sadler, the fruitful marriages of the Peers had estab. the following principle: where the wife was below 16 years of age at marriage 4·40 children; where from 16 to 20, 4·63 children; where from 20 to 23, 5·21 children; and where from 24 to 27, 5·43 children. [PEERAGE.]

In 1833 Mr. Francis Corbaux pub. his work: *On the Natural and Mathematical Laws concerning Pop., Vitality, and Mort.*, etc., which contains chap. (23) "Of the average quantity of births attributable to each marriage," (24) "Of ascertaining the quantities of births attributable to marriages contracted by females of a specified age." But as these inquiries were only conducted in view of a specific object already stated [FAMILY ENDOWMENTS], we do not purpose to dwell upon them here; but the student will find much to interest and instruct him, especially in the last-named chap., where a formula is devised for exhibiting 37 periods of fecundity, decreasing by an arithmetical progression: attributing a 24 years continuance of that faculty at certain early ages, which term is gradually reduced to *zero* (p. 152). This law of steady progression downwards is not supported by later investigations.

M. Quetelet, in his well-known *Treatise on Man*, pub. 1835, presents the statistical data which he had collected with great care in view of determining the relation of age to fecundity; but he appears conscious of the incompleteness of his materials. His final conclusion is that it is before age 26 that the greatest fecundity in women is to be observed. But he afterwards says a marriage, if it be not barren, produces the same number of births at whatever period it takes place, provided the age of the woman does not exceed 26 years. But in the light of what precedes and follows in this art., this proposition must be regarded as having very slender, if any, foundation.

Burdach, a German writer on Physiology, 1837, has remarked: "We scarcely ever encounter the births of 3 or 4 children, except in women who have passed the 30th year. Precocious marriages are not only less fertile, but the children also which are the result of them have an increased mort."

The Rep. of the Census Commissioners for Ireland, 1841, contains some interesting details regarding the fecundity of marriages in that country. The Commissioners collected returns of the ages at which people had been married, "and having returns of the deceased and absent members of each family in add. to those enumerated," they were thus enabled to collect the number of children of each sex born of those marriages, including those who had died. The returns brought into the T. under this head only included "those marriages contracted by parties living in the country in 1841, and whose ages and dates of their marriages were distinctly given in the returns"; and only the births of the marriages so stated; "and they therefore only give the fecundity of marriages of persons of certain ages from any given year in the T. to the 6th June, 1841; and it will be seen by the following statement, which shows the proportion of children to 100 marriages in each of the under-mentioned classes, how largely the cypher is affected by the increased division introduced by second marriages:"

1. In which neither party has been married before	228
2. In which the husband has been married before	164
3. In which the wife has been married before	143
4. In which both parties have been married before	87

The Commissioners say:

> These T. differ generally from T. of the same kind by containing productive as well as unproductive marriages: such being obviously necessary to afford a fair estimate of the results of a whole community; but we believe that frequently only productive marriages have been brought into calculation.
>
> It would have been more satisfactory if we could have divided the period from 26 to 35 in two; but the decimal age of 30 in this as in all our other returns was so extravagantly swelled, that the results would have been erroneous. It will be found, however, that the marriages between 26 and 35 are most numerous towards the middle of that term—that the period of birth of the first child approaches very nearly to the average age—and that the same cypher fixes also the length of a generation in Ireland. The average age at which the people marry is accordingly found to vary with the mort. of the district; and the short-lived pop. of unhealthy towns are, in their early marriages, merely following the same law which operates upon the longer-lived rural pop. who marry at a later period; each seeking the renewal of his race towards the middle period of his existence.

They continue:

> It is worthy of notice that even within the period to which these marriages belong, the proportion of the sexes of the children is on the whole consistent with the results given throughout Europe generally from marriages whose families are complete: the difference in age of the parties producing the same effect at any given period of time that would be produced from the same parties by continuance of time. Thus the proportion of male to female children is about 106 to 100; and is somewhat higher in towns than in the country; *though it differs considerably in different years*. The children appear generally to follow the sex of the elder parent; but this result is not invariable. On the contrary, it will be seen that when the age of the father exceeds by as much as 20 years that of the mother, especially in second marriages, the female births preponderate; from which circumstance, as well as some others which the T. indicate, it would appear that difference of age has a different value at different periods of life; or, in other words, that the sum as well as the difference of ages of the parents ought to form an element in a calculation of prob. on the sex of children.

Some of the points last considered have been already dealt with by us in our art. BIRTHS. We now come to the T. to which reference has been made (see opposite page):

The Commissioners point it out as worthy of remark, that if the children of first marriages during the first 5 years be totalled separately from those of the 5 last years, the male births will somewhat predominate in the latter; "from which it may perhaps be inferred that the early births of any given marriage are likely to be male; and that after a few years females begin to predominate: which may also point to the conclusion just adverted to, viz. that difference of age diminishes in its effect as the age of both parties advances." They add:

> If T. of this nature were regularly collected, interesting results of this class might be safely drawn from them. We content ourselves, however, with forming these T. rather as a groundwork for future comparison than as yet furnishing sufficient data for statistic calculation. But we may remark in passing that it will be seen by a reference to the T. of births, which gives the births of the whole community during the last ten years, that the proportion of males to females is only 104 to 100, instead of 106 to 100, as in these T., which give only the births from marriages which have taken place since 1830: whence it would appear that the number of female children has been greater in the marriages which still continued productive, though they had taken place before 1830.

The T. last referred to we do not give. The results, as here stated, being sufficient for our present purpose.

T. showing the Fecundity of Irish Marriages—1830–41.

Description of Marriage.	Ages.		Sum of the ages of both parties.	No. of Marriages.	No. of Children.		Total.	Proportion of Males to 100 Females.	Proportion of Children to a Marriage.
	Husbands.	Wives.			Males.	Females.			
Parties of Equal Ages.	under 17	under 17	34	661	872	821	1,693	106·	2·56
	17 to 25	17 to 25	42	159,761	195,895	185,913	381,808	105·	2·39
	26 ,, 35	26 ,, 35	61	58,290	63,143	60,012	123,155	105·	2·11
	36 ,, 45	36 ,, 45	81	3,354	1,665	1,480	3,145	112·	·94
	46 ,, 55	46 ,, 55	101	428	44	51	95	86·	·22
	above 55	above 55	110	136	11	6	17	183·	·12
Total				222,261	261,630	248,283	509,913	105·	2·29
Husbands who are older than their Wives.	17 to 25	under 17	38	9,847	13,203	12,558	25,761	105·	2·62
	26 ,, 35	under 17	47	4,066	5,171	5,074	10,245	102·	2·52
		17 to 25	51	128,713	159,081	150,090	309,171	106·	2·40
	36 ,, 45	under 17	57	313	402	373	775	108·	2·48
		17 to 25	61	14,325	17,478	16,270	33,748	107·	2·35
		26 ,, 35	71	15,596	15,466	14,380	29,846	107·	1·91
	46 ,, 55	under 17	67	36	37	37	74	100·	2·05
		17 to 25	71	1,516	1,615	1,564	3,179	103·	2·10
		26 ,, 35	81	2,469	2,109	2,011	4,120	105·	1·67
		36 ,, 45	91	1,335	493	445	938	111·	·70
	above 55	under 17	72	18	8	15	23	53·	1·28
		17 to 25	76	240	198	209	407	95·	1·69
		26 ,, 35	85	461	277	273	550	101·	1·19
		36 ,, 45	95	429	107	79	186	135·	·43
		46 ,, 55	105	295	14	15	29	93·	·10
Total				179,659	215,659	203,393	419,052	106·	2·33
Wives who are older than their Husbands.	under 17	17 to 25	38	757	996	994	1,940	105·	2·56
		26 ,, 35	47	92	90	97	187	93·	2·03
		36 ,, 45	57	4	...	...	...	...	...
		46 ,, 55	67	1	...	...	...	...	...
		above 55	72	1	2	...	2	...	·2
	17 to 25	26 ,, 35	51	21,287	21,934	21,088	43,022	104·	2 02
		36 ,, 45	61	744	372	398	770	93·	1·03
		46 ,, 55	71	35	10	8	18	125·	·51
		above 55	76	3	...	...	...	..	...
	26 ,, 35	36 ,, 45	71	2,413	1,225	1,147	2,372	107·	·98
		46 ,, 55	81	145	40	34	74	118·	·51
		above 55	85	12	...	...	...	...	...
	36 ,, 45	46 to 55	91	227	49	39	88	126·	·39
		above 55	95	15	3	...	3	...	·2
	46 ,, 55	above 55	105	52	2	3	5	67·	·10
Total				25,788	24,723	23,758	48,481	104·	1·88
General Total				428,077	502,012	475,434	977,446	105·	2·28

Doubleday, in his *True Law of Pop.* 1841 [we quote from 2nd ed. 1847], states the following propositions:

> The evidence of medical men is now unanimous as to the effect of the plethoric state in checking fecundity in the human female, both by preventing conception and occasioning miscarriage; but of the opposite effects produced by a poorer and lower diet, the proofs are commonly known to be perpetual. Dr. Cheyne and the older dietetic writers all notice these facts; but the accumulative evidence is now considered by medical persons as irresistible.
>
> There are numerous instances where the occurrence of misfortune and consequent privations have given families to those who were childless in their prosperity; and as elucidating the same law, we may adduce another fact, well known to medical persons, *which is the extraordinary tendencies to propagation evinced by both sexes when semi-convalescent, after enfeebling and attenuating epidemics, such as fevers, pestilences and plagues*; and the consequent extraordinary rapidity with which pop. recovers itself in those countries where the plague, the marsh fever, or famines, which cause many of these epidemics, have made havoc.

Malthus had previously [book ii. c. xiii.] said: "If a wasting plague were to sweep off 2 millions in Eng. and 6 millions in France, it cannot be doubted that after the inhabitants had recovered from the dreadful shock, the proportion of *births to deaths would rise much above the usual average in either country during the last century.*"

In 1843 Sir John Boileau, Bart., read a paper before the Statistical So.: *On the Division of Heritable Property, and its Influence on the Distribution of Wealth.* This was in the main a translation from the French of M. Passy. In most of the continental countries the property of parents, including real estate, is divided equally among all the children. This is prob. based upon the theory of the equal distribution of wealth; but nature defeats this: for an unequal number of children are born to a marriage in the different classes of society. It was said by Aristotle more than 2000 years ago, that the legislators of Greece should endeavour, before labouring to discover combinations for the equal distribution of wealth, to discover how to render every marriage equally fruitful. We may thus infer that the disproportion in families was much then as it is now. The fact that the wealthy have usually the smallest number of children tends to upset all such social theories. The paper before us furnishes the following:

> It would naturally be supposed that the facility of bringing up children tended to favour their multiplication; but it is not so: whether it arises from the difficulty of estab. them in life, from the fear of their degrading from the station of their birth, or from any other cause, it is a fact that rich families, taken in general, are those which have the fewest children; and their ranks would become thinner, generation after generation, if they were not gradually recruited by new families of recently acquired wealth. . . .
>
> The effect which riches have in restraining the fecundity of marriages is nowhere more apparent than in *Paris*. The most opulent families of France congregate there; and as they select certain quarters of the town for their residence, the facts brought out in them are more remarkable and complete than anywhere. Now . . . by the investigations made under the direction of the Comte de Chabrol, the average of births to a marriage is, in the different arrondissements, in regular inverse proportion to the easy or opulent circumstances of the pop. The following T. is drawn up from the averages of the 5 years preceding 1837. . . . In the 4 first arrondissements united, which are those where the most opulent families reside, the number of children to a marriage is only 1·97; that of the 4 poorest arrondissements, on the contrary, is 2·86; and the difference between the 2 arrondissements placed at the extremities of the scale (the 2 and 12) is as 1·87 to 3·23—or more than 73 p.c. These fact deserve the more attention, because, in spite of the reasons which determine the inhabitants of Paris to choose peculiar localities according to their respective circumstances, some poor families will be found in the quarters inhabited by the rich, and some rich families in the quarters occupied by the poor: which fact necessarily diminishes the difference we should estab. if it were possible to separate completely the different classes of the pop.
>
> We arrive at this important consideration, that if the 2, 3, 10, and 1 arrondissements, where the richest families in Paris reside, were not continually recruited from families freshly acquiring wealth, the actual number of inhabitants would not be maintained. Not only the children born there are less numerous than their parents, but as we must deduct those who die in infancy, or who never marry—and that we must estimate these at least at a quarter of the whole, in a town where 13 children out of 29 do not live to 21—it follows that in 3 generations, or the space of a century, the pop. would be reduced to half its number. Assuredly, where the pop. decreases so rapidly, it is not in danger of being impoverished by division of inheritances, but quite the contrary; and the extinction of many of its members must accumulate property and wealth among the remainder.
>
> I have not, in my preceding obs., noticed the illegitimate births, though they amount, during the last 30 years, to one-sixth of the whole; for two reasons—first, because no illegitimate children are acknowledged and admitted to take shares in the heritable property; secondly, that they take place almost entirely in the poorest classes, and their number only proves the greater productiveness of these classes. . . .
>
> If the facts we have recited suffice to prove that the rich classes multiply much less than the rest of the pop., history also corroborates it, and affords us such data as make it reasonable to believe that nature herself indicates it as a law always in operation, though restrained in some countries temporarily, and as an exception to the rule.

Mr. G. R. Porter, in his *Progress of the Nation*, new ed. 1847, says:

> The proportionate number of children born in any country cannot be taken as a test of the condition of the people. It is well known that in climates where the waste of human life is excessive from the combined causes of disease and poverty affecting the mass of the inhabitants, the number of births is proportionably greater than is experienced in communities more favourably circumstanced. *Frequently, and indeed almost always in old settled countries, the proportionate number of births decreases with the advance of civilization, and the more general diffusion of the conveniences and luxuries of life.* In fact, the pop. does not so much increase because many are born, as because few die.

In our art. BIRTHS, under date 1848-9, we have referred to the often remarked fecundity of the Icelandic women; and have mentioned the principal authorities upon the subject. We need not travel over the ground again.

Dr. Routh contributed to the *Lond. Journ. of Medicine* for 1850 an elaborate paper, *On Procreative Power*, based upon Irish statistics, wherein he extends his obs. to males as well as females. We cannot follow him through his reasoning, or his T.; but must be content with noticing his conclusions: "That there is a curve representing the exact inclination of procreative power cannot be doubted. Its exact determination, however, is impossible, when such distant intervals as 10 years are given as ordinates between the ages. . . . The age of greatest fecundity in males is from 31 to 33; in females, 26. But the *procreative* value of a person between 15 and 16 is greater than at any preceding or succeeding age." This last sentence seems inconsistent with the preceding one; but it will be seen that other writers (especially Dr. Duncan) set up a similar distinction.

The first detailed Report of the Reg.-Gen. for Scotland contained a T. from which it appeared that in 1855 the number of married women who regis. the births of children in *Edinburgh* during that year was 4208; and these had borne 15,709 children—giving an average of 3·7 children to every mother. In Glasgow, during the same year, 12,365 married women regis. a birth—these had borne 47,180 children—giving the proportion of

3·8 children to every fruitful mother. As from an alteration in the regis. schedules, no similar returns have been obtained during subsequent years, we propose to give the T. just referred to; the more so as they form the groundwork for obs. by subsequent writers.

Number and Ages of Mothers, and Number of Children which they had on the Birth of their last Child—EDINBURGH CITY, 1855.

No. of Children at Birth of Mother's last Child.	NUMBER AND AGES OF MOTHERS.						Total Mothers.	Total Children.
	15-20	20-25	25-30	30-35	35-40	40 and above.		
1 Child	85	438	290	109	52	15	989	989
2 Children ...	13	242	230	135	46	13	679	1358
3 ,, ...	2	124	304	157	61	16	664	1992
4 ,, ...	...	36	209	167	81	20	513	2052
5 ,, ...	...	7	103	190	95	18	413	2065
6 ,, ...	...	...	56	142	88	37	323	1938
7 ,, ...	...	...	19	87	81	40	228	1596
8 ,, ...	...	1	8	34	77	37	156	1248
9 ,, ...	...	...	1	22	51	36	110	990
10 ,, ...	...	...	...	5	29	20	54	540
11 ,, ...	...	...	...	3	20	18	41	450
12 ,, ...	...	...	1	...	7	11	19	228
13 ,, ...	...	...	...	...	3	10	13	169
14 ,, ...	...	...	...	...	...	2	2	28
15 ,, ...	...	...	...	...	...	1	1	15
16 ,, ...	...	...	...	...	...	...	1	16
17 ,, ...	...	...	...	...	...	...	1	17
18 ,, ...	...	...	..	...	...	1	1	18
Total Mothers	100	848	1221	1051	693	295	4208	15.709

Number and Ages of Mothers, and Number of Children which thev had on the Birth of their last Child—CITY OF GLASGOW, 1855.

No. of Children at Birth of Mother's last Child.	NUMBER AND AGES OF MOTHERS.						Total Mothers.	Total Children.
	15-20	20-25	25-30	30-35	35-40	40 and above.		
1 Child	269	1483	729	222	72	17	2792	2792
2 Children ...	30	898	844	291	75	14	2152	4304
3 ,, ...	4	436	919	419	119	34	1931	5793
4 ,, ..	...	113	702	486	171	36	1508	7032
5 ,, ...	...	27	384	515	212	42	1180	5900
6 ,, ...	...	8	191	447	240	51	937	5622
7 ,, ...	...	1	40	254	285	65	645	4515
8 ,, ...	...	...	25	157	236	88	506	4048
9 ,, ...	...	...	2	72	147	110	331	1979
10 ,, ...	...	...	...	15	75	84	174	1740
11 ,, ...	...	...	...	10	50	59	119	1309
12 ,, ...	...	...	...	2	14	31	47	564
13 ,, ...	...	...	...	1	2	19	22	286
14 ,, ...	...	...	...	...	4	9	13	182
15 ,, ...	...	..	...	1	...	4	5	75
16 ,, ...	...	...	...	...	...	2	2	32
17 ,, ...	...	...	...	...	...	1	1	17
Total Mothers	303	2966	3836	2892	1702	666	12,365	47,180

From these T. it appears that a larger number of women bear children between 25 and 30 than at any other quinquennial period of life. The number who bear children between 20 and 25 is about the same as the number between 30 and 35.

Dr. Stark, the Medical Officer of the Department, says:

> The largeness of the numbers from these two towns gives these T. a value much beyond that of any similar statistics which have yet been pub., and the general accordance of the two T. shows that faith may be put in their results, as affording a general and very close approximation to the comparative fruitfulness of each fruitful marriage in Scotland. A certain proportion of all marriages is unfruitful,

and from the few and imperfect facts which we possess, it would appear that *the proportion of unfruitful marriages increases with the rank in life;* and is prob. greater in Eng. than in Scotland. We still, however, want trustworthy information on that subject.

We have already given some statistics regarding *Sweden*, in connexion with Finland, under date 1800. Sweden is in fact the only country in Europe which systematically publishes official statistics on this subject. The returns for 1861, as given in the *Bidrag till Sveriges Officiela Statistik : Befolknings-Statistik for Aret*, 1861, confirms what we have before shown, viz. that the greatest number of child-bearing women in that country are between the ages 30-35. Then, instead of the next most prolific age being, as in *Scotland*, from 20 to 25, and from 30 to 35, in *Sweden* it is from 25 to 30, and from 35 to 40 years of age; while nearly the same number of women bear children above 40 as between 20 and 25 years of age. Dr. Stark has prepared the following comparative T. :

T. showing the Number and Proportion of Mothers at different Ages in Scotland and Sweden.

Age of Mother on the Birth of her Child.	NUMBER OF MOTHERS IN EACH AGE.		Proportion at each Age in every 100 Mothers.	
	Scotland, i.e. Edinburgh and Glasgow in 1855.	*Sweden,* 1861.	Scotland.	Sweden.
15-20 years	403	1,443	2·43	1·12
20-25 ,, ...	3,814	15,864	23·01	12·33
25-30 ,, ...	5,057	31,802	30·52	24·72
30-35 ,, ...	3,943	33,539	23·79	26·06
35-40 ,, ...	2,395	29,438	14·45	22·88
40 and above......	961	16,585	5·80	12·89
Total Mothers	16,573	128,671	100·00	100·00

It will be observed from these figures that at all ages under 25 years only half the number of women bear children in Sweden as compared with Scotland; whereas, at the other end of the child-bearing period, only half the number of women above 40 years of age bear children in Scotland as in Sweden. From this fact Dr. Stark concludes that "cold does delay the child-bearing of life in women." But we have shown that the later age of marriage appears to be the real cause.

The occurrence of plural births has been considered in regard to fecundity; and in this connexion we may notice a paper by Dr. Arthur Mitchell in the *Medical Times and Gazette*, 15th Nov. 1862, wherein he demonstrates the abnormality of twin-bearing in the human female, and arrives at the following conclusions: "1. Among imbeciles and idiots a much larger proportion is actually found to be twin-born than among the general community. 2. Among the relatives of imbeciles and idiots twinning is found to be very frequent. 3. In families where twinning is frequent, bodily deformities (of defect and of excess) likewise occur with frequency. 4. The whole hist. of twin-births is exceptional, indicates imperfect development and feeble organization in the product, and leads us to regard twinning in the human species as a departure from the physiological rule, and therefore injurious to all concerned. 5. When we pass from twins to triplets, and quadruplets, everything we know regarding these latter gives support to the general conclusions in question." We confess these passages appear to us to be overdrawn; but as they are a little outside our present purpose, we do not dwell upon them. We notice plural births again in connexion with Dr. Duncan's work, 1866.

In the 27th Rep. of the Reg.-Gen. for Eng. [pub. 1866], treating of the returns of 1864, we find the following obs. under "Births to a Marriage:"

> The marriages in a calendar year give rise to births which are regis. year after year for 20 years. The births to the 167,723 marriages in the year 1859 could only be determined by following the families, and counting all the children into the end. The division of the sum of the children by the marriages would accurately express the fecundity, as it is called, of the marriages. If the ann. marriages do not increase or decrease in number through a series of years, the division of the ann. births by the ann. marriages of the same year expresses the fecundity pretty accurately; but the marriages in Eng. are increasing rapidly; consequently the 740,275 births regis. in the year 1864 must be divided by the marriages of some earlier year, to get an approximation to the fecundity. As the age of the mothers is unfortunately not recorded, the interval in Eng. is unknown which intervenes between the mean age of marriage and the mean age of mothers when their children are born; otherwise that interval would indicate the calendar years with which the births of the year 1864 should be compared.
>
> But the interval in *Sweden* between the age of mothers at marriage (25·8 years) and their mean age at the births of their children (31·7) is 6 years; and the interval in Eng. cannot differ much from 6 years. Hence, if the legitimate births of given years are divided by the marriages of 6 years earlier date, the quotient will be the proportion of children to a marriage within close limits. In *England* the births thus determined to a marriage were 4·255, 4·301, 4·304, in the years 1862, 1863, and 1864. In *Scotland* the births in 1862 to the average marriages of 6 years earlier date (1855, 1856, and 1857) were 4·604. The number of children to a marriage thus appears to be greater in Scotland than in Eng.; and this is held to be a proof that married women are more prolific in Scotland than in Eng.

He then proceeds to apply another test, which developes a variety of interesting considerations. The average ann. number of legitimate children regis. in *England* in the 5 years 1856-60 was 626,506; while the average number of wives of the age 15-55, determined directly from the census returns of 1851 and 1861, was 2,843,374: consequently 100 wives bore 22·0 children ann. In like manner it was found that 100 unmarried women bore on an average 1·7 illegitimate children—that is, 17 children to 1000 women. 100 women, including married and unmarried, bear 12·3 children on an average. In *Scotland*, during the same years, the following proportions were found to exist: 100 wives bore 24·8 children ann.; 100 spinsters or widows bore 1·9 illegitimate children; and 100 women bore 12·0 children, legitimate or illegitimate.

The wives of *Scotland*, as well as the spinsters, are thus apparently more prolific than the corresponding classes in *England; and yet, taken collectively, the women of England are more prolific than the women of Scotland.* 1000 English women (age 15-55) bear 123 regis. children ann.; while 1000 Scotch women bear 120 children. The difference is slight, but is in favour of the English women.

This result, which appears contradictory and paradoxical, is explained by the circumstance that the proportion of recognized wives in the pop. is much lower in proportion in *Scotland* than it is in *England*; and as the fecundity of wives is to that of spinsters as 13 to 1, a slight difference in the proportions alters the birth-rates of the two pop. In *England* 52 in 100 women of the age 15-55 are wives; 48 only are spinsters and widows: in *Scotland* the proportions are reversed—44 recognized wives to 56 spinsters and widows. The following T. will make these points more clear:

Comparative Fecundity of English and Scotch Women of the Ages 15-55.

Years.	Births:					
	To 100 Women.		To 100 Wives.		To 100 Spinsters & Widows.	
	England.	Scotland.	England.	Scotland.	England.	Scotland.
1856	12·373	11·851	22·276	24·672	1·670	1·805
1857	12·337	11·982	22·137	24·861	1·671	1·835
1858	12·056	11·997	21·532	24·700	1·669	1·933
1859	12·543	12·232	22·361	25·073	1·711	2·004
1860	12·295	12·072	21·870	24·643	1·658	2·004
average in the 5 years 1856-60	12·321	12·027	22·034	24·790	1·676	1·916

Out of 1000 children whose births are regis. in *England*, 65 are illegitimate; out of 1000 regis. in *Scotland*, 89 are illegitimate (1856-60): the proportion of bastards, in an equal number of children of the two countries, is as 3 in *England* to 4 in *Scotland*. This is to be accounted for by the difference in the law of the two countries: in *Scotland* subsequent marriage legitimizes all preceding children. Hence, there are many quasi-marriages — women "hovering between concubinage and marriage to which there is nothing corresponding in England; and they would nearly all, if they lived under the English law, be explicitly married." . . . As a class (says the Regis.-Gen.), "these women in the pre-nuptial stage have comparatively few children; for the fruitful marry, and the unfruitful, as a rule, remain unmarried." He adds:

> Other explanations are conceivable; but under this hypothesis it is not necessary to assume that there is any essential difference in the organization, the fecundity, or the virtue of the women living north and south of the Tweed. The laws are different. The result seems to tell in favour of the English marriage law, and against legitimation by subsequent marriage; inasmuch as the benefit to existing illegitimate children is purchased by multiplication of their numbers, uncertain connexions between the sexes, and extensive disorganization of family life.

It will now be interesting to see the reply made on behalf of the *Scottish* Regis.-Gen. to the remarks on the relative fecundity of the two countries, made in the 27th Rep. of the *English* Reg.-Gen. as already quoted. The 10th Rep. of the Scottish Reg.-Gen. was pub. in 1867, and relates to the returns for 1864; and therein occur the following passages:

> High, however, as was the marriage-rate in *Scotland* during 1864, it was far below the *English* marriage-rate of 1864, or even the 10 years average of former years. Thus the ann. marriage-rate in England for the 10 years 1855 to 1864 was 831 marriages in every 100,000 persons; that of Scotland for the same years, 689 marriages in a like pop.
>
> The greater fertility of the Scottish female, however, makes up for the lower marriage-rate. Thus, during 1864, for the 22·725 marriages, there were 101,136 children legitimate at their birth, which gives the proportion of 4·45 legitimate children for every marriage. In *England*, during the same year, for the 180,387 marriages, there were 692,827 legitimate children, which gives only 3·84 children for every marriage.
>
> The same result is brought out by comparing the number of legitimate births with the number of married women in the pop. who are at ages capable of bearing children. As correcting the numbers of these to the middle of 1864 would make no difference in the comparative result for the two countries, we take the numbers ascertained at the census of 1861.
>
> In *Scotland* there were 352,397 married women (wives) between the ages of 15 and 50 years, and to

these were born 101,136 legitimate children during the year 1864. This shows that every 3·48 wives of the child-bearing ages were required to give birth to one child during the year; in other words, that every 348 wives gave birth during the year to 100 children.

In *England* there were 2,674,745 married women (wives) between the ages of 15 and 50 years, and as there were 692,827 legitimate births, it is manifest that every 3·86 wives gave birth during the year to one child; or, in other words, that it required 386 wives in England to produce 100 children during the year. It thus appears that, to produce 100 children, it ann. requires 38 more wives in England than in Scotland. *The Scottish female must therefore be more prolific to that extent;* and as the results of this mode of calculating the comparative fertility of the married women strictly correspond with the ordinary mode of calculating the same, and noticed above, the fact may be regarded as estab.

The following T., *showing the per-centage of men and women at different ages who contracted marriage in Scotland in* 1864, will be useful for reference:

Ages.	MEN.				WOMEN.			
	SCOTLAND.	Insular Districts.	Mainland Rural Districts.	Town Districts.	SCOTLAND.	Insular Districts.	Mainland Rural Districts.	Town Districts.
15-20 years	2·65	0·77	2·27	3·14	12·70	5·81	12·74	13·13
20-25 ,,	39·87	21·03	40·23	40·83	46·92	37·29	47·10	47·41
25-30 ,,	29·55	34·97	29·87	28·87	23·61	33·68	23·96	22·58
30-35 ,,	12·06	20·39	11·97	11·57	8·49	12·52	8·64	8·05
35-40 ,,	6·24	9·03	6·17	6·13	4·18	5·94	3·84	4·39
40-45 ,,	3·89	5·55	3·95	3·71	2·16	2·45	1·97	2·33
45-50 ,,	2·48	3·49	2·41	2·48	1·08	0·90	0·94	1·23
50 & above	3·13	4·00	2·95	3·24	0·66	0·51	0·53	0·80
Not stated.	0·13	0·77	0·18	0·03	0·20	0·90	0·28	0·08
All ages	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00

In 1866 Dr. J. Matthews Duncan, A.M., M.D., pub. his well-known work: *Fecundity, Fertility, Sterility; and Allied Topics;* of which a 2nd ed. appeared in 1871. It is from this latter that we shall quote in this art. Dr. Duncan is the great modern authority on the subjects of which he treats. He sets up a definition which it is important to notice:

> It is necessary, in order to avoid confusion here, to estab. some amount of distinction, which I shall maintain as I go on, between fertility or productiveness, and fecundity. By fertility or productiveness I mean the amount of births, as distinguished from the capability to bear. This quality of fertility or productiveness is interesting chiefly to the statistician or the political economist. When a pop. is the subject of consideration, it does not even involve the capability of every individual to bear, nor even the conditions necessary for conception. *By fecundity I mean the demonstrated capability to bear children;* it implies the conditions necessary for conception in the women of whom its variations are predicted. This quality of fecundity is interesting chiefly to the physiologist and the physician. In short, fertility implies fecundity, and also introduces the number of progeny; while fecundity simply indicates the quality without any superadded notion of quantity.

We have not been able in our abridged treatment of the subject to maintain the distinctions here set up; and even in following the contents of Dr. Duncan's book we are unable to do so. We treat of fecundity as measuring the offspring of married life, among different peoples, under different climates and circumstances. Dr. Duncan says:

> It has from the earliest times been a matter of philosophical inquiry how much influence the age of women, at the time of commencing to live in wedlock, exerts upon their fertility; and opposite opinions on this point have been embraced by authors of note. The various questions connected with this topic have always been unsatisfactorily treated, on account of the insufficiency and inaccuracy of the data used to settle them, when facts and not mere impressions were the foundations of argument. In the following pages I have attempted to introduce some degree of exactness into the subject, and have used a considerable mass of figures as the almost exclusive basis of my conclusions.

He then reviews the statistics of *Edin.* and *Glasgow* in 1855, as already presented; and in addition the data collected and pub. by Dr. Collins, Master of the Dublin Lying-in Hospital; and by Dr. Granville, pub. in the 2nd vol. of the *Trans. of the Obstetrical So. of Lond.;* and says thereon:

> Judging from these data, it would appear that most children are born of women at or near the age of 30 years, or the middle of the child-bearing period of life; and that the offspring of mothers of ages advancing from the commencement of child-bearing to the age of 30, or the middle of the child-bearing period, gradually increases; that the climax is reached at this age, and that thereafter the offspring of mothers advancing above 30 gradually diminishes. But while the age of 30 forms the climax, there is not an equal fertility on either side of it; a much larger part of the pop. being born of mothers under 30 than of mothers above 30. Dividing the number of mothers at 30 years, and adding together those on each side of the division, we have on the side of the younger 12,106; and on the side of the elder women 4279, giving a majority of 7827 in favour of the younger; or, otherwise stated, we have three-fourths of the births among the younger half, and only one-third among the elder. The mean age of the mother in Dr. Collins's T. is 27 years.

He then proceeds to treat of "the comparative fertility of the female pop. [and of wives] as a whole at different ages;" and arrives at the following conclusions: 1. That the fecundity of the mass of wives in our pop. is greatest at the commencement of the child-bearing period of life, and after that period gradually diminishes. 2. That the fecundity of the whole wives in our pop. included within the child-bearing period of life is, before 30 years of age is reached, more than twice as great as it is after that period. 3. That the fecundity of the wives in our pop. declines with great rapidity after the age of 40 is reached. This is in close conformity with the special obs. preceding.

We turn to part iii. Its first chap. is "On some Laws of the Production of Twins;" a subject already touched upon under date 1862. Dr. Duncan says:

> The birth of twins occurs once in about 80 deliveries. Triplets, quadruplets, quintuplets, and even higher figures are occasionally observed; they are very uncommon, and the rarity is progressive with the number. The normal or ordinary rule in woman is to bear one child at a time; and the next most frequent condition is temporary or persistent sterility—two points in which she signally differs from what is generally believed of the animals subjected to the obs. referred to. . . . The rarity of a plural birth in woman, and the increased danger to both mother and offspring in these circumstances, render such an event, *in a certain limited sense*, a disease, or an abnormity. This abnormity, if used alone, is not a good test of fecundity, and it has been resorted to for this purpose in consequence of the enticement of its apparently simple and easy application to women as to the lower animals.
>
> It is, at first sight, evident that a woman, even repeatedly bearing twins, may be surpassed in fecundity by another bearing single children more rapidly, or for a longer period. Neglect of these and other such truths has led to errors; and I may cite a popular hasty conclusion regarding the comparative fertility of races in illustration. The greater frequency of plural births in one race than in others, as in the Irish compared with the English, has been represented as showing that the former is more prolific than the latter. Whether the conclusion be true or not, I do not here propose to inquire; certainly, the grounds of the conclusion are insufficient to estab. it, and unsatisfactory; seeing that an opposite conclusion is not absolutely inconsistent with them, as I have just shown. . . .

He gives the following facts. In the Dublin Lying-in Hospital 16,385 women produced 480 twin children. In Edin. and Glasgow in 1855, 16,301 wives produced 396 twin children. And then adds (supported by Oesterlen and Boudin), that "the variation of the frequency of twin-births in different countries is so great as to remove all prob. from the notion or belief that the greater or less frequency of twins shows greater or less general fertility." Much add. information on this subject is given in subsequent chapters. [BIRTHS, near close of art.]

Part iv. is "On the Laws of the Fertility of Women;" and Dr. Duncan says: "So far as I know, very little is ascertained in this department of physiology. The writings upon it are for the most part to be found in the works of political economists, and are chiefly confined to the single question of the increase of a pop. under various circumstances." In chap. x. he arrives at the following conclusions, from data stated—1. That the mass of early or first children, up to the 3rd or 4th, come into the world in more quick succession than those that immediately follow. 2. That a mass of children, numbering from the 4th or 5th to the 10th, succeed one another more slowly than those of the first category, and of the 3rd. 3. That a mass of children, following the 10th, come into the world hurrying after one another with a gradually increasing rapidity, which excels that of all their predecessors—a circumstance which may, in part at least, account for the great mort. of women bearing children after the 9th. But even these laws require qualification in several respects before they can be regarded as general. Dr. Duncan says hereon:

> Wives . . . who bear numerous progeny do so in virtue of two differences from other women. *They bear their children more rapidly, and they continue longer fertile, than their neighbours.* Were the . . . . conclusion just given not before us, it might be supposed that the rapid bearing of earlier children was the result of youth and vigour. This supposition is not only inconsistent with the third conclusion, but with the law to be hereafter demonstrated, that the oldest women, who are continually fertile, bear children more rapidly than any other.

The average length of interval between all successive children is (19·9) nearly twenty months.

Chap. 11 treats of the "Fertility of Wives-Mothers married at Different Ages." The author says: "Before discussing this and the next topics, it is necessary to remark that fertility may be maintained in degree in two ways—either by long continuance, or by intensity while it lasts. . . . I shall show that of a mass of fertile women, the younger are, on the whole, more fertile than the elder." After some further preliminary obs., he proceeds:

> The figures now to be adduced not only confirm the doctrine that early marriages are more fruitful than late marriages: they also explain it—*showing that the younger married have a longer continuance of fertility than the older married*, allowing to both the same duration of marriage, and all within the child-bearing period of life. So far as the demonstration has hitherto gone, we have shown that the younger are more fertile than the elder; that, excluding those who have no children, the younger will bear larger families than the elder. We have not shown which bear their children most rapidly—that is, which have the greatest fecundity while it lasts. . . . We now proceed to show that, among the fertile, the younger have a longer continuance of fertility than the elder. *It is this last circumstance which accounts for the greater fertility of the marriages of the younger.*

He then gives the T., which we do not purpose to reproduce, its purport having been already made plain.

He further says: "There can be, in my opinion, no doubt *that early marriages are most favourable to the pop.*; and as I have already shown that wives under 20 are less fecund than those from 20 on to at least 24 years of age, the fertility of the younger as a mass is the more striking. But although most highly fertile as a mass, the number of sterile amongst those married under 20 years of age is not inconsiderable, and it is probably this amount of sterility which, while satisfactory statistical evidence was deficient, has given rise to the error now commented upon." He supplies the following valuable T.—corrected for sterility:

T. showing the Probable Amount of Continuance in Fertility at Different Epochs of Fertile Wives Married at Different Ages.

Age of mother at marriage	15-19	20-24	25-29	30-34	35-39	Total
The proportion child-bearing about the 5th year of married life is 1 in	1·44	1·62	1·80	1·86	2·94	1·68
Or a per-centage of	69·4	61·7	55·5	53·8	34·0	59·4
The proportion child-bearing about the 10th year of married life is 1 in	1·80	2·40	2·52	3·24	...	2·34
Or a per-centage of	55·5	41·7	39·7	30·8	...	42·7
The proportion child-bearing about the 15th year of married life is 1 in	2·52	4·08	7·86	13·98	...	4·20
Or a per-centage of	39·7	24·5	12·7	7·1	...	23·8
The proportion child-bearing about the 20th year of married life is 1 in	4·74	8·75	57·48	...	...	8·82
Or a per-centage of	21·1	11·4	1·7	...	...	11·3
The proportion child-bearing about the 25th year of married life is 1 in	37·80	288·30	...	..	...	100·44
Or a per-centage of	2·6	·38	...	...	...	·99

And adds hereon:

> Before passing from the perseverance in fertility of the early married, I shall point out a difficulty of which it gives the solution. In part i. chap. v. I showed that fecundity in wives from 15 to 19 years of age is less than at from 20 to 24: that is, of the young women fewer have children. At the same time (chap. iii.) I showed that the fecundity of the mass of wives in our pop. is greatest at the commencement of the child-bearing period of life, and after that epoch gradually diminishes; that is, those not the most fecund do, as a mass, produce most children. These two propositions are at first sight difficult to reconcile; and it is accordingly satisfactory to be able to show that the greater continuance in fertility of the mass of younger wives is the explanation of the apparent anomaly. To illustrate how the T. read in affording this explanation, I may state that while I formerly showed that the wives from 15 to 19 years of age are not so fecund as those from 20 to 24 years, the T. last adduced shows that at the 5th year of marriage, the youngest married—that is, at ages from 15 to 19—already surpass all others in fertility, 1 in 1·44 bearing; that at the 10th year of marriage they still further surpass in fertility all others, 1 in 1·80 bearing; and that at the 15th year of marriage they in a still higher degree surpass all others, 1 in every 2·52 bearing children within a year.

This further T. illustrates the same point even in a more striking manner:

T. showing the Intensity of Fertility in Wives-Mothers at Different Ages.

Duration of Marriage.	Mother's age:						
	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Under 5 years.	1·128	1·519	1·825	1·844	1·827	1·698	1·200
5 & under 10	2·500	3·190	3·750	4·048	4·085	3·792	4·000
10 ,, 15	...	5·333	5·453	5·903	6·197	5·964	6·500
15 ,, 20	...	...	6·000	...	7·914	7·993	8·435
20 ,, 25	...	...	...	7·000	9·396	9·178	10·528
25 ,, 30	...	...	...	...	...	12·368	13·600
30 years.	...	...	...	...	...	...	13·000

He says hereon: "The conclusion here arrived at is founded upon lengths of married life. Were the figures such as to give, instead of lengths of married life, length of interval between the births of first and last children, the results would be still more striking: for I have already shown that in the case of the elder, fertility is later in beginning to show itself than in the younger."

After Dr. Duncan had prepared the work just noticed, but before it was pub., he requested Prof. Tait, of the Edin. University, to "point out to him some simple method of comparing the fertility of different races." This led the Professor to pass under careful review many of the facts already noted; and in the end he propounded the following general law: *Fecundity at various ages is proportional to the number of years a woman's age is under* 50. This implies, for instance, that if at 20 a woman has a child once a year, at 40 the interval separating successive children would prob. be 3 years: because the difference between 20 and 50 is three times as great as the difference between 40 and 50. This law of the decrease of fecundity is so simple in form as to appear applicable to individuals; but it must be remembered that it was deducible from obs. over a mass of women.

In 1874 Mr. C. Ansell, jun., pub. *Statistics of Families in the Upper and Professional Classes;* and therein is contained much information of interest associated with this subject. Under FAMILIES we have already noticed some of the results of Mr. Ansell's investigation; while under MARRIAGE other portions will be dealt with. But we still have several of his chapters which fall particularly within our present scope. We take first chap. xiii., "Interval between Marriage and the Birth of Children."

It should be stated that the returns were made voluntarily, in reply to a request, accompanied by appropriate schedules; but the compiler does not consider they can be at all impugned on that account.

The annexed T. shows the proportionate numbers, out of a total number of 10,000 births of first children, that occur in each week from the 32nd to the 47th after marriage:

Altogether, slightly more than half of the total number of first births take place within 12 months after marriage, and upwards of two-thirds of the remainder in the course of the 2nd year. In a comparatively few instances, however, the first appearance of children is delayed for a much longer period; and the following particulars of 14 cases, in which marriages that had been barren for 10 years or more ultimately became fruitful are given by Mr. Ansell.

Weeks after Marriage.	Number of Births in each Week out of a total of 10,000 first births.
32nd	18
33rd	26
34th	27
35th	48
36th	51
37th	81
38th	166
39th	308
40th	419
41st	434
42nd	447
43rd	409
44th	494
45th	343
46th	318
47th	279

Number of Case.	Age of the Parents at Marriage.		Interval between the Marriage of the Parents and the Birth of the			Remarks respecting the Parents.
	Father.	Mother.	1st Child.	2nd Child.	3rd Child.	
	Years.	Years.	Years.	Years.	Years.	
8811	31·74	24·74	10·18	...	...	Both survived the Child-bearing age of the Mother.
1047	30·07	18·76	10·77	20·96	...	Ditto.
7705	24·41	24·00	11·33	19·83	...	Ditto.
7575	17·59	not stated	11·48	12·85	...	Ditto.
8796	26·95	25·95	11·75	...	...	Ditto.
7745	26·06	22·65	11·94	...	...	Ditto.
5729	29·11	26·90	12·18	...	...	Ditto.
4379	35·12	25·15	12·31	14·34	16·61	Ditto.
7744	33·98	24·87	10·35	...	...	Both alive, but Mother not past Child-bearing age.
8929	41·50	25·17	10·92	...	...	Ditto.
2491	25·43	21·07	12·82	14·57	..	Ditto.
7963	32·51	21·03	13·66	16·09	...	Mother aged 43·91 when the Father died.
68	31·65	19·22	10·79	12·42	14·14	Mother died in Childbirth.
2696	39·13	22·00	13·39	20·81	...	Ditto.

The intervals that on the average elapse between marriage and the births of successive children are given in the following T.:

Order of Birth.	Mean time of Birth after Marriage.	Difference.	Order of Birth.	Mean time of Birth after Marriage.	Difference.
	Years.	Years.		Years.	Years.
1st Child.	1·32		10th Child	16·33	1·40
2nd ,,	3·02	1·70	11th ,,	17·65	1·32
3rd ,,	4·83	1·81	12th ,,	18·85	1·20
4th ,,	6·69	1·86	13th ,,	19·87	1·02
5th ,,	8·53	1·84	14th ,,	20·71	·84
6th ,,	10·28	1·75	15th ,,	21·41	·70
7th ,,	11·92	1·64	16th ,,	22·01	·60
8th ,,	13·47	1·55	17th ,,	22·54	·53
9th ,,	14·93	1·46	18th ,,	23·02	·48

Mr. Ansell says:

It will of course be understood that the differences in this T. *do not indicate the average periods intervening between the births of two succeeding children in the same families, or even in families consisting of similar numbers of children,* but simply the amount of variation in the interval between

marriage and the birth of children in numerical order from the first upwards, in large and small families taken together in the proportions in which they are found to occur; and they serve to show that, as might be inferred, children succeed each other more quickly in large than in small families.

With the view, however, of testing this more directly, the families in which the following conditions were fulfilled, viz. the father being under the age of 35 years, and the mother under 30, and a spinster, at the date of the marriage, and both having survived beyond the time when the latter would be likely to bear children, were divided into six classes, according to the number of children in each family, and the average intervals between marriage and the births of the 1st, 2nd, and 3rd children in each class were ascertained, the results being stated in the following Table:—

In Families consisting of the under-mentioned Numbers of Children.	Interval between the Marriage of the Parents and the Birth of the 1st Child.	2nd Child.	3rd Child.
	Years.	Years.	Years.
1, 2, or 3	1·78	4·84	7·38
4, 5, or 6	1·37	3·32	5·49
7, 8, or 9	1·18	2·82	4·68
10, 11, or 12 ...	1·05	2·54	4·15
13, 14, or 15 ...	1·06	2·40	3·81
16, or more ...	·96	2·15	3·47

"It will be seen (says Mr. Ansell) that there is a close and clearly defined relation between the number of children of which a family is ultimately composed and the intervals that elapse between the marriage of the parents and the births of the elder children, such intervals being, in the cases of 2nd and 3rd children, less than half the length in very large families that they are in small ones." This is in conformity with the views of Dr. Duncan and other writers. Mr. Ansell adds: "*This Table might therefore furnish to persons, while yet in the early years of their wedded life, the means of forming an approximately correct estimate as to the total number of children that they would be likely to have, and thus, in many instances, be of considerable practical value.*"

We next deal with the "Number of Children to a Marriage" (chap. xii.); and here it becomes necessary to note that, while twin-births are counted as 2 for number, they are treated as only 1 in reckoning the order of birth of children born subsequent.

In the following T. will be found summarized, according to the respective numbers of children in each family, 2141 cases in which both parents survived the child-bearing age of the mother, and 447 cases in which the mother died before passing such age, leaving the father surviving her; the cases being restricted to those only in which the return was made by the father of the children, and in which the date of birth of the mother, and whether the parents were bachelor and spinster or otherwise at time of marriage, were stated.

Number of Children to a Marriage.

Number of Children in each Family including Stillborn.	Both Parents survived Child-bearing Age of Mother.				Mother died during Child-bearing Period, Father surviving her.			
	Bachelor.		Widower.		Bachelor.		Widower.	
	Spinster.	Widow.	Spinster.	Widow.	Spinster.	Widow.	Spinster.	Widow.
	A	B	C	D	E	F	G	H
	Number of Cases.				Number of Cases.			
0	152	5	31	3	20	...	1	...
1	131	7	14	2	68	...	6	...
2	183	11	25	3	50	4	4	...
3	193	3	14	1	54	1	1	...
4	185	4	21	2	39	2	5	1
5	229	3	15	1	59	1	...	...
6	194	6	11	...	29	...	3	...
7	165	...	6	1	34	2	1	...
8	125	1	2	...	17	...	...	...
9	121	2	5	...	17	...	1	...
10	86	...	10	...	6	...	1	...
11	63	...	5	...	8	...	...	...
12	46	...	3	...	6	...	...	...
13	19	...	2	...	1	...	...	...
14	10	...	2	...	...	...	...	...
15	7	...	1	...	2	...	1	...
16	4	...	...	...	1	...	...	...
17	3	...	...	...	1	...	...	...
18	3	...	...	...	...	...	...	...
	1919	42	167	13	412	10	24	1

Referring to the first division of the T., where both parents survive the child-bearing age of the mother, in column **A** there are 1919 marriages of bachelors to spinsters. Of these 152, or 8 p.c., were childless. In 131 cases, or nearly 7 p.c., there was only 1 child. The mean number of children to each family, where both parents survived the child-bearing period of the mother, is 5·28, or 528 children to 100 such marriages, of which number 517 would be born alive and 11 stillborn.

Classifying the data according to the professions of the fathers, the results are shown in the annexed T.:

Profession.	Total Births, including Stillborn.	Born Alive.
Clergymen	5·36	5·25
Legal Profession ...	5·32	5·18
Medical Profession.	4·96	4·82
General...	5·50	5·39

[Class "General" included members of the aristocracy, merchants, bankers, manufacturers, and all others not included in the other 3 classes.]

Column **E** shows the number of children in each family in cases of bachelors married to spinsters where the wife had died in the lifetime of her husband before her child-bearing period had passed. A definition of this period will be given later.

The proportion of cases in which an increase in the number of children in a family is prevented by the premature death of the father or mother, may be determined with an approximation to accuracy by calculating the prob. of the parents' deaths taking place between the mean ages at marriage and the mean period after marriage that child-bearing terminates. The mean age at marriage as shown by Mr. Ansell is 25·16 years for spinsters married to bachelors, and 29·32 years for bachelors married to spinsters.

The mean age of mothers at the birth of their last child, in cases where both father and mother survive the child-bearing period, is 38·00 years, or 12·84 years older than at marriage, and the mean age of their husbands at that time would consequently be 42·16 years. As, however, the last child might be posthumous, it was considered that if the husbands attain a mean age of six months less, or 41·66 years, their subsequent deaths would not affect the number of children.

The total number of children in the families included in column **E** is 1778, and deducting from these 1067, for 202 families at 5·28 children each, there will remain 711 children to be divided among 210 families in which the mother died prematurely, which will give an average of 3·39 children each for such cases.

The data do not supply the means of ascertaining the average number of children in families where the fruitful period of marriage is shortened by the death of the father, or in those where both parents die prematurely; but there does not appear to be any reason for supposing that in the former it differs in any material degree from what it is in those cases where the wife's death is the arresting cause; and in cases where both parents die before the child-bearing period has passed, since it is the death of the first that determines the event, the mean number of children in a family may be assumed to be the same as where one parent only dies.

The cessation of the child-bearing age of the mother is assumed if mother was:

Over 48 and had had no child for 2 years.
,, 47 ,, ,, 3 ,,
,, 46 ,, ,, 4 ,,
,, 45 ,, ,, 6 ,,
,, 44 ,, ,, 8 ,,
Under 44 ,, ,, 10 ,,

This classification, Mr. Ansell admits, might prob. have the effect of including some isolated cases in which further births would occur; but it was found on trial that they would be so extremely few as not to appreciably affect the results; while a more rigid classification would have excluded a large number of cases in which no rational doubt could exist that child-bearing had ceased, although the mothers had not attained such ages as to render it, on that account alone, certain.

It will be remembered that this is but a brief outline of a very minute investigation. Those who desire further details must consult the work. It is the first time any investigation into the families of the upper and professional classes has been made, with the exception of the PEERAGE FAMILIES.

On the subject of the cessation of child-bearing we take the following from the *Cincinnati Inquirer*, Jan. 1863:—"Dr. W. McCarthy was in attendance on a lady aged 69 years, on Thursday night last, who gave birth to a fine boy. The father of the child is 74 years old. Mother and child are doing well. This is a remarkable phenomenon, and has created much discussion among the physicians of the city."

We append a few more or less remarkable cases illustrating the subject. A portrait of Dianora Frescobaldi, painted by one of the Bronzinos in the 16th century—and which sold for £600 from the San Donato collection not many years since—has an inscription at its foot which asserts that Dianora was the mother "of at least 52 children." She never had less than 3 at a birth, and there is a tradition that she once had 6.

In the State Papers, Domestic Series, Charles I., appears an extract of a letter from

George Garrard to Viscount Conway: "Sir John Melton, who entertained you at York, hath buried his wife, Curran's daughter. Within 12 months she brought him four sons and a daughter: two sons the last summer; at this birth two more and a daughter: the children all live."

Ebenezer Erskine, a well-known Scotch preacher and writer, born 1680, died 1754, had 33 children.

Thoresby, in his *Hist. of Leeds*, 1715, mentions the three following remarkable cases: 1. The wife of Dr. Phineas Hudson, Chancellor of York, as having died in her 39th year of her 24th child. 2. Dorothy, the wife of Mr. Joseph Cooper, of Leeds, died of her 26th child. 3. Mr. Wm. Greenhill, of Abbotts Langley, in Herts, had 39 children by one wife.

On the 21 Nov. 1768, Mrs. Shury, wife of a cooper in Vine Street, Westminster, was delivered of two boys, which made her family 26 by the same husband. She had been previously confined with twins *during the same year*.

An inscription on a tomb in St. Martin's Church, Leicester, states that a Mrs. Heyrick of that place lived to see springing from herself 143 descendants.

In the *Annals, Hist. and Guide of Leeds and York*, it is recorded that Ann Birch was, in 1781, delivered of 10 children. One daughter is said to have been the sole survivor of the group. She was married to a market-gardener named Platts, and lived in Leeds, well-known. She weighed 16 stone, and died aged 87.

Brand, a writer of great reputation, in his *Hist. of Newcastle*, 1789, mentions, as a well-attested fact, that a weaver in Scotland had by one wife 62 children, all of whom lived to be baptized!

About 1850, David Wilson died at Madison, Indiana, aged 107 years. He had been married five times, and was the father of 47 children, 35 of whom were living at the time of his death. Instead of ribs, he had a solid bone over his chest—a circumstance which saved his life during the border wars with the Indians in Kentucky. Up to near his death his bodily and mental powers were very little impaired.

In Aberconway Church may be seen a monument to the memory of Nicholas Hooker, who was himself a 41st child, and the father of 27 children by one wife. [Will any friend send the recorded date of his death?]

A correspondent to the [daily] *Standard*, 7 Sept. 1864, furnished the following interesting details:—"I had an aunt, the wife of the Rev. T. P——, of Fawley Rectory, near Henley, who had 3 children at a birth—two boys and a girl—who have all lived to this time and to be long married. It is known that the wife of a physician in Norwich in 1817 had 4 children at a birth—3 boys and a girl—who survived the very first infancy, and were taken away by children's illnesses. The mother still lives at the age of 87. This case was considered somewhat remarkable, as the father was at the time 70 and the mother 40, and these 4 completed the number of 12 children of the second marriage, all then living. There is likewise a distant connexion living in Norwich who had 3 girls in 1858, who still survive. I once afterwards knew of a quadruple birth when staying in Livonia in 1831; a peasant woman had a girl and 3 boys, but only the girl was born alive."

The *Journal of St. Petersburg*, a newspaper of the highest character, stated that a Jewish woman residing at Pillten, Courland, had, within a period of 10 months, given birth to 7 children! At the end of July, 1871, she brought four girls into the world, and towards the end of May, 1872, she presented her husband with two boys and one girl. Mother and children doing well.

The *Boston Medical and Surgical Journ.* stated that on the 21st of Aug. 1872, Mrs. Timothy Bradlee, of Trumbull County, Ohio, gave birth to 8 children—3 boys and 5 girls. They were all living, and healthy, but quite small. She was married 6 years previously, and weighed 273lbs. on the day of her marriage. She has given birth to two pairs of twins, and now 8 more, making 12 children in 6 years. Mrs. Bradlee was a triplet, her mother and father being twins, and her grandmother the mother of 5 pairs of twins.—*British Medical Journal*, Nov. 1872.

By way of supplement to the preceding, we may add a few cases of more modern date, which we have collected, and believe to be authentic.

Triple Births:—1859—Oct. A poor woman in Urban Street, South Hackney, was delivered of 3 children, 2 girls and a boy.

1860—March. The wife of J. Ether, 5, George Street, Princes Street, Haymarket, was delivered on the 12th inst., by Mr. Watkins, jun., surgeon, 11, Chandos Street, of 3 fine boys, all of whom, with the mother, are doing well. The parents, in humble circumstances, have 3 other children, the eldest being only 4 years old.

1863—July. The wife of a labourer named Charles Looney was delivered of 3 children (2 boys and a girl) at 15, Edward Street, Dockhead, Bermondsey. She was attended by Mrs. Muirhead, a nurse from the Surrey Dispensary, and the children are all living and in good health. Looney, who is employed on Fenning's Wharf, London Bridge, is in very poor circumstances.—*Times*.

1864—May. On the 5th inst., the wife of Eugene Candler, Esq., of Oxford Villa, Queen's Road, St. John's Wood, and 8, Billiter Street, E.C., of a son and 2 daughters. All doing well.

1867—March. The Queen has caused to be forwarded the sum of £3 to a miner's wife named Maria Jose, living at Camborne, Cornwall, as a donation to the poor woman on the occasion of her confinement of 3 children.

1867—April. Another triple birth has taken place in the West of England. A donation of £3 from the Queen has been received by the poor mother, a Mrs. Chope, of Bideford.

1867—Oct. The *Messager du Midi* relates that the wife of a small farmer at Pierrelongue (Drôme) has just been safely delivered of 3 girls. Fifteen months since she had given birth to twins, having 2 other children previously, and all girls.

1868—Feb. The wife of a private of the 1st Royals, at Chatham, named Cullum, has just given birth to 3 children,—2 boys and a girl,—the whole of whom are finely formed children, and, with the mother, are doing well.

1870—March. The Rev. J. Denman, a Newmarket clergyman, has received from Her Majesty a donation of £3 for the benefit of Mrs. Howlett, the wife of a labourer in that town, who was recently delivered of 3 children. One of the children has since died.

1870—March. The wife of Mr. Withecombe, farmer, Devon, gave birth to 3 children.

1871—August. At Brompton, near Scarborough, the wife of Mr. Edward Myers, blacksmith, gave birth to 3 children,—2 sons and a daughter,—all of whom are doing well.

1872—March. On Good Friday, at 19, Waterloo Street, Brighton, the wife of T. H. Davies, Esq., 2nd West India Regt., of 3 daughters.

1872—March. The wife of John Munday, of Rosslyn Cottage, Rosslyn Grove, Hampstead, gardener to Mr. Huggins, gave birth to 3 female children, who survived but a few hours. The mother is progressing favourably.

1873—Oct. At Stoke Newington, Mrs. James, the wife of a packer, employed in the City, was on Monday safely delivered of a boy and 2 girls, and the mother and children are in excellent health.

No date. The *Invergordon Times* says the wife of James Watson, fisherman, Cromarty, gave birth to 3 sons. We are glad to understand that the mother and "young fishermen" are doing well. We learn that Mrs. Watson was on two former occasions delivered of twins, thus making her the happy mother of a considerable family in three instalments.

,, The wife of William Rakewell, a weaver, living at Tanstelf, Pontefract, was brought to bed and was safely delivered of 3 fine lads, who were, with their mother, all doing well.

,, On Thursday evening last, Elizabeth Hayley, the wife of John Hayley, an invalid sailor, gave birth to 3 female children, at a lodging-house in White's Row, Portsea. It appears that poverty had driven the parents to seek a furnished lodging in this locality.

,, The wife of Mr. Harrison, a compositor, was safely delivered of three children—2 girls and a boy—still living. On Wednesday last the wife of Mr. J. H. Burnay, also a compositor, was delivered of 4 children—3 boys and a girl—of whom one of the boys was born dead, but the other two and the girl are doing well. The fathers reside in the same neighbourhood (Burton Street, Burton Crescent), and were fellow apprentices in the *Watchman* office, in which Mr. Burnay is still employed.

Quartets.—A correspondent of *Notes and Queries* says: Rather more than 40 years ago the wife of a man in humble life, near Bromsgrove, had 4 children at one birth. They were all girls; and this instance is to my mind the most extraordinary on record, because all these children lived. I myself saw them all 4 together when they were about 11 years old. They lived near the high road to Worcester, a short distance from Bromsgrove. When I saw them they were all dressed alike, and I could detect no difference in their features.

1861—April. The wife of a rich proprietor, residing at Cannstadt, in Wurtemburg, was safely delivered of 4 boys, who, with the mother, were doing well.

1866—April. The *Banffshire Journal* records the fact that Mrs. Mowatt, in that county, had just presented her husband with 2 sons and 2 daughters, all doing well.—*Pall Mall Gazette.*

1867—May. The wife of Private Patrick Corbett, Military Train, stationed in Dublin, was delivered of 4 children, 3 girls and 1 boy. The mother and children all doing well.

1867—Dec. The wife of John Noble, 34, St. Michael Street, Dumfries, gave birth to 4 male children, all living. Mrs. Noble was attended by Dr. Thompson, and she was not much worse than on previous occasions of being confined. The children are not much under the ordinary size of infants at birth, and are healthy looking, and seem as likely to live as other infants. The mother is progressing very favourably. Mrs. Noble was born at Brooklands, parish of Kirkpatrick, Durham, stewartry of Kircudbright, and her husband is a native of Yorkshire; he is employed as a weaver of tweeds in the factory of Messrs. Milligan, Henderson, and Co., hosiery and tweed manufacturers, Dumfries.—*Dumfries Standard.*

1868—July. The wife of John Guernsey, a mechanic employed in the factory department at Chatham Dockyard, was yesterday delivered of 4 children at one birth, the whole of whom were born alive. A short time since the wife of a soldier, attached to the 3rd battalion at Chatham, gave birth to 3 children, all of whom are now living.

1870—March. The *Burton-on-Trent Times* states that the wife of a labourer in the employ of Messrs. Robinson and Co., brewers, named William Getley, residing in the "Fourteen Houses," Branstone Road, gave birth to 4 healthy children, all girls.

1874—Oct. At Cusop, Hay, Herefordshire, the wife of a toll-keeper, in poor circumstances, of 4 children—2 being born alive, and they, with the mother, doing well.—*Times.*

1874—Nov. A woman named Latouche, at Quebec, had 4 boys at one birth.

1875—April. The Countess of Schlippenbach, of Heiligenkrew, in Croatia, was lately delivered of 4 infants at a birth—3 girls and a boy.

Quintets.—1784—September. A women at Konigsberg.

1800—Oct. The wife of Nelson, a tailor in Oxford Market, London.

1858—April. A woman named Elspet Gorden, residing in Rothes, gave birth to 3 male and 2 female children. The 3 boys were born alive and lived till the following morning, but the 2 girls were stillborn. The births were premature, being in the sixth month; but what is very extraordinary, all were full grown for the period of gestation; nor is this the most surprising circumstance in the case, one of the boys having actually two front teeth when he came into the world. Dr. Dawson, Rothes, attended the woman, who, we are happy to say, is doing wonderfully well.—*Elgin Courant.*

FEE CONDITIONAL.—See FEE SIMPLE.

FEE EXPECTANT.—Where lands are given to a man and his wife, and the heirs of their bodies, the heirs have a fee expectant. The opposite of fee simple.

FEE-FARM RENT.—In Law, a rent-charge in fee, issuing out of an estate in fee of at least one-quarter of the value of the land at the time of its reservation. By some authorities this latter qualification has been regarded as immaterial. No grant in fee-farm can be made since the Stat. *Quia Emptores.*

FEE SIMPLE.—In Law, an estate of freehold of inheritance, in lands, tenements, or hereditaments. Tenant in fee simple absolute, or, as is more briefly expressed, in *fee*, is one who has the fullest power of disposing of his real estate which the law allows; and not being disposed of by him either in his lifetime or by devise, it descends to his heirs general. An estate to a man and his heirs, qualified by a condition or limitation capable of abridging it,—as an estate to A and his heirs on condition of paying a sum of money on a stipulated day, and if he fail to do so, then to another,—is termed a *fee conditional*; or sometimes, with less propriety of language, a *fee simple conditional.*—See ESTATE. See also ALIENATION.

FEE TAIL.—See ESTATE TAIL.

FEIGAN, JOHN ALBERT, one of the founders, and now Gen. Man. of *British Imperial.* He has been practically connected with ins. bus. for some 15 years past, as agent successively for the *N. Brit. and Mercantile*, the *Royal*, the *Railway Passengers*, the *Consols*, and the *Western*, from which last he retired on its amalg. with the *Albert.* He has delivered some effective lectures on the subject of Life Ins.

FEIGNED DISEASES.—*Morbi ficti, vel simulati.* Alleged affections, which are either pretended or intentionally induced, as abdominal tumor, animals in the stomach, etc. In 1843 Dr. Hector Gavin pub. a book: *On Feigned and Factitious Diseases, chiefly of Soldiers and Seamen; on the means used to simulate or produce them; and on the best modes of discovering impostors, etc.*

FELO DE SE [*A felon on himself*].—A self-murderer; one who feloniously commits self-murder; which may arise in several forms, indirect as well as direct: as, if in attempting to kill another man, he runs against the sword of his antagonist; or, shooting another, the gun bursts and kills himself; and on doing any unlawful or malicious act, the consequence of which is his own death. He must be of years of discretion, and in his senses at the time he commits any such crime.

It is a usual condition in life, as in accident pol., that under such circumstances all interest under the pol. is forfeited to the Co., except where the pol. shall be held by a third party for a *bonâ fide* consideration. If it were not so, the right under the pol. would vest in the Crown.

Many considerations having a bearing upon ins. contracts arise in this connexion. They will be fully discussed under SUICIDE.

FELONY.—Such a crime as from its heinousness occasions a forfeiture of all the offender's lands and goods. In its general acceptation it comprises all capital crimes, or such as have been capital, below treason. All treasons are felonies; although all felonies are not treasons. It is necessary to observe that although forfeiture is an inseparable incident to felony, yet forfeiture of land is not always a necessary consequence; for petit larceny, although a felony, does not occasion forfeiture of lands. Every species of felony is, however, followed by forfeiture of goods and personal chattels.

FELONY; its Effect on Ins. Contracts.—Where death is caused by the felonious act of the insured: as where he dies by the hands of justice, by duelling, or *Felo de se*, public policy avoids the contract, and this apart from the peculiar conditions or stipulations of the contract itself. Upon conviction before a competent tribunal, any pol. of ins. to which the person so convicted of treason may be entitled, whether upon his own life, or upon the lives of other persons, as well as all other goods and chattels, and *choses in action*, of which he may be possessed at the time, or which may afterwards accrue to him during the term of his punishment (including those accruing to him by survivorship by virtue of his marital right, to the exclusion of the next-of-kin of a deceased wife), will be forfeited to the Crown. This forfeiture takes place from the time of the conviction, and not, as in the forfeiture of lands, from the time of the commission of the offence. The felon may, therefore, before conviction, assign his personal property for valuable consideration, as when the assignment is made to secure an antecedent debt, or the costs to be incurred for his defence. But if the alienation be colourable and without consideration, for the purpose of avoiding a forfeiture, it is void against the Crown. But when the *chose in action* is vested in the felon as trustee or mortgagee, there will be no forfeiture except as to his beneficial interest, if any. The fact of a felon having made a will and appointed executors is of no avail.

But in order to render the property liable to forfeiture, the felon must be beneficially interested; for since the Stat. 4 & 5 Wm. IV. c. 23, s. 3 (1834), no lands, chattels, or stock vested in any person upon any trust or by way of mortgage shall escheat to the King, or the lord of any manor, or other person, by reason of the attainder or conviction of any such trustee; but shall remain, survive, or descend as if no such attainder or conviction had taken place; and hence it would seem that such property will pass by his will as well as when he is entitled himself as executor.

If the convict, whether traitor or felon, obtain the pardon of the Crown, he is restored to his former estate, although no words of restitution are used. But a conditional free pardon in the penal colony will not have this effect. And in all cases, the Crown, becoming entitled, will take subject to the same equities as the property was liable to in the hands of the subject.—*Bunyon's Law of Life Ins.* 1868.

It is also to be remembered that the finding of the coroner's jury is not conclusive against the executor or administrator of the deceased; but may be traversed in the Court of Queen's Bench. In the case of a civil action, it throws the onus of proof upon the party alleging the contrary. [Coroners.] [Forfeiture.] [Life Ins., Conditions of.] [Suicide.]

FELTON, Henry, was Sec. of *Architects, Civil Engineers*, etc., at its formation. He was afterwards Sec. of *Cambrian and Universal* from its formation down to 1854.

FEMALE Beauty, Ins. of.—An American newspaper announced several years since that a new ins. asso. had been estab. at Santa Fé, the object of which was to insure female beauty! The plan stated was as follows:—A woman might estimate her personal beauty at whatever price she pleased, and insure it at that value, paying a proportionate sum according to the period insured for. The Co. insures female beauty from the age of 15 to that of 30, paying the insured a specific sum if her beauty goes off or is accidentally injured during a given time. The promoters prob. relied on the supposition that but few women would ever admit that the time had come to make a claim. Was fair "wear and tear" to be taken into account? Alas! we have no further details.

FEMALE Chastity, Ins. of.—A project of this character was set on foot, to the extent of obtaining subs. thereto, by Wm. Helmes, of Change Alley, during the era of the South Sea Bubble, 1719–20. At first we were disposed to regard the statement that a co. had been projected for such a purpose as a fable; but further research and a more intimate knowledge of the events of that period lead us to believe that the very novelty of the project would secure a large subs. list, which would be all the projector could expect or desire. Lawson, in his *Hist. of Banking*, includes this among the speculative ventures of the period named, while in the *Somers Tracts*, edited by Sir Walter Scott, the Ins. of Maidenh—ds is regarded as a solemn proposal. [Divorces, Ins. against.]

FEMALE Labour.—The 5 & 6 Vict. c. 99 (1842) altogether prohibits the employment of women and girls in mines and collieries (underground) after 1st March, 1843, and imposes heavy penalties.

FEMALE Life.—The question of the value of Female Life, actuarially speaking, as compared with that of Male Life, is one of considerable interest, as it is one which has, at least in more modern times, received considerable attention. Its investigation has, so to speak, been attended with many surprises, and more than one false alarm. It is a question which is constantly before the actuary, and in a considerable variety of forms. The want of correct knowledge on the subject led many of the early annuity sos. and widows funds into troubles from which they never recovered. Even yet there are certain "moot points" in practice, the solution of which the series of important facts intended—for the first time—to be presented in form here is designed to facilitate.

1661.—Graunt, in his *Natural and Political Obs.*, first pub. this year [3rd. ed. 1665, from which we now quote], observed the difference in the numbers of males and females; and his famous "Index" contains the following passages thereon: "26. That not 1 woman in 100 dies in childbed, nor 1 in 200 in her labour. . . 52. That there are 14 males for 13 females in Lond., and in the country but 15 males for 14 females. . . 55. There being 14 males to 13 females, and males being prolifique 40 years, and females but 25, it follows, that in effect there be 560 males to 325 females. 56. The said inequality is reduced by the later marriages of males, and their employment in wars, sea-voyages, and colonies. 57. Physicians have 2 women patients to 1 man, and yet more men die than women. . . . 77. The number of souls in the 97, 16, and 2 out-parishes [of Lond.] is about 384,000. 78. Whereof 199,000 are males, 185,000 females. . . 87. That in several places the proportion between the males and females differs. 88. That in 90 years there were just as many males as females buried within a certain great parish in the country."

1693.—Dr. Halley, in constructing the *Breslau* T. of Mort., does not appear to have discovered the superior longevity of females over males; and consequently of the greater proportion of females always living in a pop. ordinarily constituted. This is seen in the fact that after he had calculated from his T. the number of inhabitants in Breslau between 18 and 56 years of age to be 18,053, he says: *At least one-half of these are males.*

1696.—Gregory King, in his *Natural and Political Obs. and Conclusions upon the State and Condition of England*, treating of "the several distinctions of the people as to males, females, married and unmarried, children, servants, and sojourners," says that the 5½ millions of souls in Eng. [according to his estimate], "including the transitory people and vagrants, appear, by the assessments on marriages, births, and burials, to bear the following proportions in relation to males and females:"

	Males.		Females.	Males.	Females.
In London and the B. of Mort.	10	to	13	... 230,000	... 300,000
In other cities and market towns	8	,,	9	... 410,000	... 460,000
In the villages and hamlets ...	100	,,	99	... 2,060,000	... 2,040,000
	27	,,	28	2,700,000	2,800,00

"That the males and females in the kingdom in general are aged, one with another, 27¼ years." "That in the kingdom in general, there is near as many people living under 20 years of age as there is above 20. Whereof one-half of the males is under 19 years, and one-half of the females is under 21 years."

1725.—Neither De Moivre, Hayes, nor any other of the host of writers on Life Annu. of this period and the succeeding 15 years, appear to have had their attention drawn to the superior value of female life.

1739.—Maitland, in his *Hist. of London*, says: Having the B. of Mort. now before me, I think it will not be amiss to undeceive the publick in these particulars: 1. Much the greatest part of mankind are of opinion that there are 2 females to 1 male of the human species; but that this is a palpable error is manifest from the accounts of christenings and burials from the year 1657 to that of 1738, during which time of 80 years there appear to have been christened 619,187 males and 585,334 females, and buried 994,656 males and 965,298 females, which in the christenings amount to 33,853 more males than females, which is 5½ p.c. in favour of the former, and in the burials 29,358, which is likewise 3 p.c. in favour of the males. This is a double demonstration that there are considerably more males than females. He adds: The majority in favour of the males is by our naturalists said to be designed by nature for the support of that part of the human species which is more liable to be destroyed by war than the other. But as war is only casual, and not perpetual, I am of opinion that this supernumerary supply is designed by nature as a constant remedy against incessant contingencies which the males are more obnoxious to both by land and water than the females. He then proceeds to refute a second prevailing opinion, viz. that not one person in a 1000 lives to 70 or 80.

1740.—Herr Struyck pub. in Holland: *Lyfrenten*,—a work on L. Annu.,—wherein he showed the difference between male and female lives, by 2 Life T. constructed from data deduced from registers kept in the city of *Amsterdam* during 35 years. But the whole number of lives observed upon was only 794 males and 876 females, beginning at 5 years of age in each case. The mort. was very similar to that shown by Halley's *Breslau* T.; but the small number of lives under obs. has caused these T. to be regarded as of small value.

1742.—Kersseboom, in his investigations into the mort. of the Dutch annuitants, separates the males from the females, but disregards the difference of their longevity in the general T. of Mort. which he prepared. His data exhibit, from the experience of many thousands, the mean duration of male children distinct from that of females. With a slight correction, the result may be briefly stated thus: If there were 10 classes of children at each age, the first under 1 year old, the last aged 9; and if the mean duration of life which it was found each individual in a class had ultimately attained were separately set out, the sum of the existence obtained by 10 boys would be 369 years, that of the girls 402·5.

It may be further remarked, says Mr. John Finlaison, from whom we here quote, that these children commenced their existence nearly two centuries ago.

1746.—Deparcieux pub. his *Obs. on the Mort. of the Nominees of the French Tontines of* 1695 *and* 1740, and also of large numbers of the inmates of religious houses in France during the 17th century; and he therein demonstrated *that the expec. of female life was greater at all ages than that of male life;* but he was unable to assign the precise magnitude of the difference, except in regard to the monks and nuns—the T. for which we have already given under DEPARCIEUX'S MORT. T. The annexed abstract will be useful here.

In our hist. of Life Annu. we have shown, under date 1746, how a knowledge of the superior longevity of female life was turned to considerable monetary advantage by the Dutch, who were subs. in large numbers to a scheme of Exchequer Life Annu. issued by the Gov. of Gt. Brit. in that year. They for the most part nominated *girls.*

Age.	Expectation of Life.	
	Monks.	Nuns.
20	39·33	40·17
30	32·17	33·17
40	24·75	26·25
50	18·00	19·50
60	12·17	13·25
70	7·25	8·42
80	3·67	4·58
90	1·83	3·25

1747.—An accurate account of the pop. of *Berlin* was taken this year. The number of female citizens exceeded the number of male citizens in the proportion of 459 to 391; and yet out of this smaller number of males more had died for 20 years preceding 1751, in the proportion of 19 to 17. This fact is commented upon by Sussmilch in some of the later ed. of his *Gottliche Ordnung,* etc.

1753.—Maitland, in his *Hist. of Edinburgh,* expressed much surprise at finding that the number of *males* in the city was less than the number of *females.* Dr. Price, reviewing this incident in 1769, said, "But this is by no means peculiar to Edinburgh."

Herr Sussmilch pub. in the 2nd or 3rd ed. of his *Gottliche Ordnung,* a T. of Mort. for the City of *Berlin* during the 4 years 1752-55, wherein it is shown that the numbers born in that city during that period were, males 9219, females 8742, or 21 to 20. The numbers that died under 2 years of age were, males 3118, females 2623, or 7 to 6. The numbers that died upwards of 8 years of age were, males 135, females 215, or 5 to 8. The numbers that died between 91 and 105 were, males 21, females 55.

1760.—The Rev. Mr. Gorsuch, vicar of Holy Cross, Shrewsbury, took an account of the number of male and female inhabitants in that parish, turned of 70—the number of females was 35, of males 8. In 1770 he again took the numbers, they were—females 35, males 26. And for the entire 10 years, 11 out of 365 had died between the ages 85 and 102—these were all females.

1762.—When the scheme of the *Equitable So.* was matured, no female lives were taken at the then ordinary rates who were under 50 years of age. From 50 and upwards they were taken at the same rates as males; and there was the following announcement: "The lives of girls, and of women under 50 years of age, and of men whose occupations are hazardous, may be assured upon payment of such advance in the prems. as shall be adequate to the hazard." The actual prems. charged by the So. under this regulation were as follows: age 20 (whole life), males, £3 9*s.* 4*d.*, females, £3 14*s.* 3*d.*; age 30, males, £3 18*s.* 7*d.*, females, £4 4*s.* 4*d.*; age 40, males, £4 17*s.* 9*d.*, females, £5 4*s.* 8*d.* For further details see EQUITABLE LIFE, sub-heading *Female Lives.* (See 1773.)

1769.—Dr. Price, in his *Reversionary Payments,* etc., at p. 47 [we quote from 2nd ed.], speaks of "the *greater mort. of males*"; but in a later portion of the same work, and after extended obs., he says (p. 266): "There is one more fact which I shall here take notice of, and which deserves more attention *than has hitherto been bestowed upon it.* I mean 'the difference between the prob. of life among *males* and *females,* in favour of the latter.'" He proceeds:

> From the account in p. 254, it appears that at *Northampton,* though more *males* are born than *females,* that nearly the same number die; yet the number of living *females* is greater than the number of *males,* in the proportion of 2301 to 1770, or 39 to 30. This cannot be accounted for, without supposing *that the males are more short-lived than the females.* One obvious reason for this fact is, that *males* are more subject to untimely deaths by accidents of various kinds; and also, in general, more addicted to the excesses and irregularities which shorten life. But this is by no means the only reason. For it should be observed that at *Northampton* the number of female children was, in 1746, greater than the number of male children in the proportion of 759 to 624. *The greater mort. of males therefore takes place among children.* [Here was a sudden ray of light.] But this, together with the greater mort. in general of males at all ages, will more particularly appear from the following recital of facts.

He then proceeds to review some of the data we have already given regarding *Berlin, Shrewsbury,* etc.; but finally turns to the scheme for the widows and orphans of ministers in Scotland, which he sums up as follows: In 1770 the whole number of *widows* in life, derived from the whole body of ministers and professors, was 380; but the number of *widowers* among them has, one year with another, been scarcely 90; that is, not so much as a quarter of the number of *widows.* He continues:

> It may be easily seen, and it would not be difficult to demonstrate, that neither the greater number of persons left widows, nor any prob. supposition concerning the greater frequency of marriages among widowers, can completely account for this, without admitting *the greater mort. of males.*

> This, therefore, appears on the whole to be a fact well estab.: and it follows from it that, *in order to calculate the values of life annu. and rev. with exactness, there ought to be distinct T. of the prob. of life for males and females.* All that is necessary to obtain the proper data for forming such T. is, that the *sexes* as well as the ages of the dead should be specified in the bills; and this is an improvement of our B. of Mort. which would give little trouble, and which, therefore, I hope, will be some time or other made.

1772.—In his 2nd ed. Dr. Price says (p. 357):

> M. Deparcieux at *Paris*, and M. Wargentin in *Sweden*, have observed that not only women live longer than men, but that *married* women live longer than *single* women. The regis. examined by M. Muret [for Canton *Vaud* in Switzerland] confirm this; and it appears particularly, that of equal numbers of single and married women between 15 and 25, more of the former died than of the latter, in the proportion of 2 to 1. The reason of this may be, as M. Muret acknowledges, that the women who marry are a selected body, consisting of the more healthy and vigorous part of the sex. But this prob. is by no means the only reason: for it may, I think, be expected that in this, as well as in all other instances, the consequences of following nature must be favourable.

This subject will be further discussed under MARRIAGE, ITS INFLUENCE ON LONGEVITY.

1773.—Dr. Price said in the 3rd ed. of *Obs. on Rev. Payments*, etc.:

> In the printed account of the So. in Nicolas Lane for *Equitable Assu. on Lives and Survivorships*, there is a T. of the values of assu. on *female lives*, which supposes them to be more hazardous than *male lives. This T. is derived from an opinion generally received at the time it was composed*; but I am desired to inform the public that no such T. shall be admitted into the future eds. of that account; the So. *being determined to maintain the just credit it has acquired, by keeping strictly, in every instance, to calculations founded on the best obs.*

This was advancing backwards, as will be hereafter demonstrated.

In this same vol. he gives the substance of a regis. which had been kept in the town of Gainsborough for the 20 years 1752–71, wherein the deaths of females at nearly all ages is more numerous than of males; but as the proportions of the pop. for the same period are not given, the T. is of little value. He said that 1 in 25½ of the pop. lived to be 80, "of whom the major part, in the proportion of 49 to 32, are females."

1775.—Mr. Charles Brand, the then Registrar of the *Amicable* Corp., pub. his *Treatise on Assu. and Annu. on Lives*, etc., wherein, replying to some obs. of Dr. Price on the *Laudable So. for the Benefit of Widows*, he says, "The life of a woman compared to that of a man *in this So.* is of the same proportion as 2 to 1." By the words "in this So." being placed in italics we assume that he meant the *Amicable* So. The statement is a remarkable one; but not altogether inconsistent with other authorities we have quoted.

1779.—Dr. Heysham, in his Obs. on the *Carlisle* B. of Mort. (as abridged by Mr. Milne, 1815), observed "that women in general live longer than men"; and says: "This is almost universally agreed." He then endeavours to account for the fact; and says: "The following causes are conceived to operate considerably:"

> 1. Men are, in general, more intemperate than women. 2. They are exposed to greater hardships and dangers. . . . 5. . . The constitutions of males, as fitted for more violent and laborious exertions, are firmer and more robust than those of females; their muscular and nervous fibres may therefore be supposed to become stiff, rigid, and incapable of performing the functions necessary to health and life sooner than females, both on account of their original texture, and the friction which must necessarily occur from laborious exercise.

1783.—In his 4th ed. of *Reversionary Payments*, etc., Dr. Price gives a Mort. T. for the Kingdom of *Sweden*. According to 7 different enumerations of the pop. during the years 1757–75, the proportions of the pop. of each sex at different ages had been ascertained. The total male pop. was 1,103,432; the total female pop. 1,206,278. The relative deaths of the sexes during the 21 years 1755–76 were:—

Ages.	Males. 1 in	Females. 1 in	Ages.	Males. 1 in	Females. 1 in
under 1 year	3·5	4·0	between 45 & 50	48·3	62·2
between 1 & 3	17·3	17·8	,, 50 ,, 55	36·4	46·7
,, 3 ,, 5	34·5	35·8	,, 55 ,, 60	30·7	38·0
,, 5 ,, 10	68·1	73·2	,, 60 ,, 65	22·2	24·6
,, 10 ,, 15	131·2	147·6	,, 65 ,, 70	15·9	19·6
,, 15 ,, 20	139·1	148·2	,, 70 ,, 75	10·7	11·2
,, 20 ,, 25	105·1	131·8	,, 75 ,, 80	8·0	8·2
,, 25 ,, 30	94·3	106·9	,, 80 ,, 85	5·1	5·2
,, 30 ,, 35	82·3	82·3	,, 85 ,, 90	4·0	4·1
,, 35 ,, 40	77·6	85·5	above 90	2·5	2·6
,, 40 ,, 45	57·1	62·3			
			all ages ...	33·25	35·94

Dr. Price also gave the relative expec. of male and female lives in Sweden. The difference in favour of the latter being considerable at all ages up to 60, and continued in a less marked degree up to the end of the T. at age 75. At age 10 the difference was 6·89 years.

From this Swedish T. Dr. Price deduced separate annu. values for male and female lives—the first time such separate values had been ascertained. The results have been already given in our art. ANNU. ON LIVES at this date. (See 1815.)

In this same 4th edition was given a Mort. T. for *Chester*, founded upon data recorded by Dr. Haygarth for the 10 years 1772-81. This T. Dr. Price regarded as superior in accuracy to any T. which had preceded it. The following is a comparison of the expec. shown by this T. for the two sexes:

Ages.	Males.	Females.	Ages.	Males.	Females.
Birth.	28·13	33·27	50	17·64	20·62
5	43·20	47·44	55	15·14	17·52
10	41·92	45·17	60	12·36	14·20
15	38·05	41·36	65	10·79	11·94
20	34·86	38·10	70	8·05	8·81
25	32·00	34·78	75	7·00	7·14
30	29·25	32·27	80	5·43	5·20
35	25·97	29·26	85	4·25	4·81
40	22·92	26·37	90	2·50	3·46
45	20·20	23·50			

In the same vol. is a T. for *Stockholm*, formed from the proportions of the living to the numbers who had died at all ages in the 9 years 1755–63. The relative numbers of the sexes were found to be—males 32,540, females 38,642. The expec. of life is shown in the following abstract:

Ages.	Males.	Females.	Ages.	Males.	Females.
Birth.	14·25	18·10	40	15·61	19·25
5	31·05	37·12	45	13·78	17·17
10	30·00	36·89	50	11·95	15·12
15	26·74	33·43	55	10·30	12·89
20	23·85	30·01	60	8·69	10·45
25	21·40	26·80	65	7·39	8·39
30	19·42	23·98	70	5·81	6·16
35	17·58	21·62	75	4·09	4·39

From these last 3 T. it appeared that the difference between the duration of life of males and females was least for the Kingdom of *Sweden* at large; greater at *Chester;* and greatest at *Stockholm*. Dr. Price did not regard this difference as "entirely natural."

1784.—An enumeration of the pop. of St. Petersburg was taken: there were 126,827 males, and only 65,619 females. This large proportion of males was found to arise, in part, from the numbers who came to the town to earn their capitation tax, leaving their families in the country; and in other part, from the custom among the nobles of retaining a prodigious number of their boors as household servants in St. Petersburg and Moscow.

In the *Phil. Trans.* 1786 (76th vol.), there is a paper by Dr. Joseph Clarke, Physician to the Lying-in Hospital, Dublin, wherein he gives details concerning 19,786 deliveries, extending over a period of 27 years. For every 10,000 births of females there were 11,008 of males; while for every 10,000 born alive there were born dead—males 630, females 408. The principal object of Dr. Clarke's paper was to assign the cause of there being a greater proportion of males than females born dead, and also a greater mort. of males in early infancy. This he does by showing that the male fœtus, being considerably larger and heavier than the female, requires more nourishment, and has greater difficulties to encounter in the birth. [INFANT MORT.]

1792.—Dr. Price, in the 5th ed. of his *Reversionary Payments*, etc., speaking of the different asso. making provision for widows, on "correct obs. and mathematical principles," adds:

> But hitherto it has not been possible for any of them in calculating the contributions necessary to support the annu. to be governed by any regard to the longer duration of the lives of women. It has been just observed that this renders the payments from an 8th to a 12th or 13th *too little* for such annu., when deduced from any T. which gives (as all T. have hitherto done) only the values of lives in general, without any discrimination between males and females.

1815.—Mr. Joshua Milne pub. his *Treatise on the Valuation of Annu. and Assu. on Lives and Survivorships*, etc., wherein was contained the CARLISLE T. OF MORT. In that the sexes were not distinguished. We now know that the females comprised about 55 p.c. of the whole number brought under obs.—a much greater proportion than occurs in the gen. pop. Mr. Milne gives in his chap. "On the Comparative Mort. of the two Sexes," some very interesting facts regarding female life, which we now proceed to notice.

According to the "best information" he had met with on the subject, the mort. among males, as compared with that among females, was as follows:

In	Term.	Years.	Died ann.		Male mort. to	
			Males, 1 of	Females, 1 of	Female.	Difference.
					As 1000 to	
Stockholm	1755–63	9	17·22	21·28	809	191
Montpelier	1772–92	21	23·37	27·35	854	146
Carlisle	1779–87	9	37·56	42·23	889	111
,, ...	1801–10	10	41·85	46·54	899	101
,, ...	1788–95	8	36·62	40·31	908	92
,, ...	1796–1800	5	40·80	44·82	910	90
Sweden and Finland	1776–95	20	35·60	39·11	910	90
,, ...	1765–69	5	36·01	38·98	924	76
,, ...	1755–63	9	33·40	35·89	931	69
Wales	1801–10	10	52·77	54·78	963	37
E. and W.	1801–10	10	46·98	48·42	970	30
England	1801–10	10	46·60	48·00	971	29

The examples here are arranged according to the excess of male mort. The T. shows that the excess of male above female mort. is greater in large towns than in the general average of the pop. This appears in a marked degree on comparing Stockholm the capital with Sweden generally. For E. and W. the rate for males is somewhat too low, in consequence of those employed in the army and navy being included therein, while the deaths of many of these are not included.

Mr. Milne computed a T. for Sweden and Finland from the data of Herr Nicander for each period of 5 years from 1776 to 1795, and the expec. of life for the two sexes. The following is a quinquennial abstract.

Age.	Males.	Females.	Age.	Males.	Females.
0	34·74	37·54	50	18·36	19·66
5	46·74	49·11	55	15·39	16·37
10	45·03	47·28	60	12·47	13·18
15	41·51	43·74	65	9·92	10·41
20	37·86	40·04	70	7·87	8·12
25	34·48	36·44	75	6·13	6·38
30	31·22	33·00	80	4·75	4·94
35	27·95	29·68	85	3·75	3·93
40	24·61	26·27	90	2·98	3·13
45	21·45	23·03			

Mr. Milne considered that the results of Dr. Price's T. for all Sweden and Finland corresponded pretty well with these, "considering that 20 years elapsed between the two periods wherein the obs. were made." The mort. of females being greater than males in the 2nd, 3rd, and 4th years of age in Dr. Price's T., Mr. Milne considered "to be owing to a small error in adjusting the decrements, for it is not consistent with the documents they are derived from."

In the *Montpelier* Life T., as constructed by Mr. Milne upon the data of M. Mourgue for the 21 years 1772 to 1792 inclusive, the difference between male and female expec. at decennial periods is as shown in the T. annexed:

Age.	Males.	Females.
0	23·37	27·35
10	44·12	46·77
20	36·52	39·45
30	30·43	33·34
40	20·06	27·45
50	18·23	21·35
60	13·14	15·73
70	9·02	10·79
80	5·17	6·17
90	1·80	2·74
95	0·83	1·61

1818.—By an enumeration of the pop. of *Prussia* there were found to be 5,244,308 males, and 5,328,535 females: the latter being to the former in the ratio of 203 to 200. In the kingdom of *Naples*, same year, there were found to be 2,432,431 males, and 2,574,452 females—being in the proportion of 95 males to 100 females.

1820.—At the U.S. census this year there was found to be, according to the returns rectified by Humboldt, 3,993,206 white males, and 3,864,017 white females, giving 97 of the latter to each 100 of the former. The constant influx of males by immigration accounted for these proportions.

1821.—At the census of *Gt. Britain* taken this year, there was found to be 7,137,014 males, and 7,254,613 females, being in the proportion of 100 of the former to 101⅑ of the latter; which was the same as in *Prussia* in 1818.

1824.—M. le Comte de Chabrol, in his *Recherches Statistiques sur la Ville de Paris*, etc. 1824, gives a "comparison of deaths in both sexes," wherein he says: "The number of males who die in any one year at Paris generally exceeds that of females," and adds in confirmation, that the "total number of deaths registered since A.D. 1745 is 1,548,919, viz. 816,984 males, 731,935 females. The ratio of these two numbers is nearly 28 to 25."

1825.—According to the official return of Dr. Holst, the insane existing in *Norway* in 1825 was in the proportion of 1 to 508½ of the males, and 1 to 597½ of the female pop. This aspect of the subject will be further discussed under INSANITY.

1827.—Francis Corbaux, a well-known writer on pop. in the earlier part of the present century, in his scheme for a "Family Endowment Inst.," submitted to the Select Parl. Committee on F. Sos. 1827, says: "Although the births of the males exceed those of the females in the proportion of 4 p.c. or thereabouts, yet the quantity of the latter who survive the age of 21 years rather exceeds, on the contrary, the quantity of male survivors of the same age; and that excess in favour of female life gradually increases for the succeeding years."

Mr. John Finlaison said before the Select Parl. Committee on Friendly Sos. 1827: It has been asserted by Dr. Price and other writers that there are two periods in female life at which the mort. is very great, as compared with the other periods of life, namely, between the ages of 45 and 52, and between the ages of 20 and 35; "I beg to observe, however, that all my obs. lead to a complete refutation of this assertion: the contrary is decidedly the case in the earlier period of life; for so far from the mort. being greater between 20 and 35, it is less in that intermediate period than it is even at 20; and so far from the mort. being greater between 45 and 52, there is not the slightest indication of such an effect; this discovery I made about 6 years ago, and communicated the same to various scientific persons." [It may be stated in explanation of what here appears that Mr. Finlaison's obs. on the Gov. annuitants (laid before Parl. in 1829) had been made about 1823.]

He pointed out to the same Committee that the difference between the sexes in regard to mort. led "to a most important conclusion, as respects the practical purposes of sos. for granting pensions to survivors." "By my T. it may, generally speaking, be said to result as follows: supposing a mother were to leave a pension to her son, the value of such pension would only be two-thirds of a pension left by a father to his daughter, the relative ages of the children and the parents being precisely the same. It follows therefore that any so. making no distinction of sex, and granting pensions to widows, according to the strict mathematical result, would inevitably be ruined." [GOVERNMENT ANNUITANTS T.]

Mr. Griffith Davies said before the same Committee: "All obs. tend to confirm that female life, I believe at all ages, is better than male, and even married better than single."

Mr. Wm. Morgan said on the same occasion: "The duration of life in general is a little better among females than among males, *but in my opinion not sufficient to render it necessary to compute separate T. for them.* The exp. I have had proves they are much alike."

The Rev. John Beecher informed the same Committee, that "Dr. Price did discover the superior longevity of females, *but did not consider it such as to authorize or require any variation in his T.*" This hardly conforms to the views of the learned Doctor as quoted by us under date 1769.

In 1827, also, M. Quetelet pub. *Recherches sur la Population*, etc., wherein was contained two T. of *Mort.*: one for the city of *Amsterdam*, the other for the city of *Brussels*. These each show the mort. for males and females separately. Taking in these, as in some former cases, the sum of the first 10 years existence, there was in Amsterdam for the males 402·15, for the females 450·43; and in Brussels for the males 397·97, for the females 412·95 years.

A prosp. of the *Eagle and United Empire* L., issued about 1827, contained distinct T. for female as against male lives; and concerning this the following explanation was given:

> The general belief in the superior value of female life which has long obtained, having been fully demonstrated by the important T. pub. in 1825 by order of the House of Commons, the country became entitled to the benefit of its exp.; and accordingly the directors ordered new rates to be calculated, which should distinguish at every age the price of ins. for the two sexes. This investigation justified some reductions—not indiscriminate, or induced only by the dangerous spirit of competition, but derived from more recent and from more authentic obs., and enabled them to ins. not only the younger male lives, *but the female life at all ages, at prems. below the ordinary standard*. This, in other words, increases the value of all property held during the lives of women; without diminishing

Ann. Prem. (*whole life*) *to Ins. £100 at Death.*

Age.	Male.			Female.		
	£	*s.*	*d.*	*£*	*s.*	*d.*
10	1	12	7	1	8	1
15	1	17	6	1	12	0
20	2	2	6	1	15	1
25	2	5	6	1	18	9
30	2	9	10	2	3	2
35	2	16	0	2	8	7
40	3	4	4	2	15	0
45	3	15	8	3	3	4
50	4	12	4	3	15	0
55	5	13	0	4	11	8
60	6	18	2	5	14	7

> the ultimate security for the children, it places a larger proportion of an annu. payable during marriage, at the immediate disposal of the parties, and enables all who may be anxious to make a bequest to the objects of their regard, or to their dependents, to do so at a less sacrifice of present comforts.

In the first instance the Co. did not accept female lives under 20 years of age; a few years later it accepted them as young as 10 years. For an abstract of the T. of rates see preceding page.

1829.—Mr. John Finlaison, the then Gov. Act., laid before Parl. his *Rep. on Life Annu.*, the results of which mark an epoch in regard to what is technically known as the "Value of Female Life." The Rep. gave the details of an inquiry into the mort. experienced by several sets of annuitants who had been nominees, or subs. to various Gov. loans in Gt. Brit. It will be reviewed at length in our art. Gov. ANNUITANTS, MORT. OF; here we shall only deal with those passages falling immediately under our present subject. He points out that the accurate ascertainment of the mort. of the respective sexes is "a consideration of very great consequence, for if there be a substantial difference in the rate of mort. to which the two sexes are severally liable, it follows as a self-evident truth, that the rate of mort. resulting *from obs. on both sexes indiscriminately can be applicable to neither: being too much for one, and too little for the other.*" He proceeds:

> It is in like manner a necessary consequence, that a property depending on the tenure of 2 lives of given ages, may have 4 values essentially different from each other: 1st, if the pair of lives are males; 2nd, if they are females; 3rd, if they are male and female, and the male the oldest; 4th, if they are male and female, but the female elder. In common parlance, if a lease depended on the joint lives of mother and daughter,—mother and son,—father and daughter,—father and son, although in each case the parent were aged 35, and the child 10, yet the lease would, if justly valued, have 4 different prices. And if any property accruing to the child, in reversion, on the death of the parent, were in the meantime to be sold, its value is most seriously affected, according as it shall fall under one or other of those cases, if there be, indeed, a substantial difference in the mort. of the two sexes. And hence the labour of computing T. of the values of all sorts of life annu. and ins. must be enormously increased.
>
> That there is such a disparity is a fact within the obs. of all. In every census there are found alive many more females than males; while in the births and baptisms of every town, district, or kingdom, there is invariably produced at least 105 boys to 100 girls.

He then reviews the results of the inquiries by Kersseboom, Deparcieux, Dr. Price, and M. Quetelet; doing each, as we think, but scant justice; and altogether ignoring the many others we have named. Indeed, he says: "No other obs. on the duration of life of the separate sexes have as yet been pub., as far as I am aware." He continues:

> And although in Eng. (where financial transactions, of which the only measure of value consists in the accuracy of some known law of mort., are of vastly greater magnitude than perhaps in all the rest of Europe put together) any such inequality in the longevity of the males as compared with the females has been, and is to this day neglected, yet it is not the less certain that all who pursued these inquiries have any time these 80 years been perfectly well convinced that a great and substantial difference existed.

It is to be hoped, he says, that the annexed obs. would remove all doubt whatever on that subject. "They demonstrate that except under the age of 12, and above the age of 85—extreme periods in which perhaps no distinction of the mort. is apparent—there is at every other period of life a remarkable and decided advantage in favour of the female."

> This is first most evident about 14, after which the mort. among the female sex is observed to proceed onwards to the age of 55 with the slightest imaginable increase: contrary to many received notions that child-bearing and nursing entail on this sex a severe mort. in early life; and that in the earlier stages of the decline of life they are also subject to many casualties—all of which is utterly disproved by the fact. *It is not true, but quite the contrary, therefore, that married women incur greater danger than the single;* and reasonably may this conclusion be admitted, when it is considered that the married are, in the first instance, in regard to health and strength of constitution, always the *élite* of the whole sex, the unhealthy not choosing to marry. After 60 the female mort. advances more rapidly, but it is always, until the age of 80 at least, very decidedly less than that of the males.
>
> Among these on the contrary, after the age of 14, a remarkable increase of mort. occurs, which rapidly advances until the age of 23; it then diminishes to 33; very slightly rises again, and falls alternately till the age of 49, when it stands at the same point as at 23. From 49 the decline of life commences on the side of the male the same as with regard to the female; and these occurrences are manifest in almost every one of the obs.—a matter that cannot be referred to accident.

The T. annexed is an abstract of the expec. of the two sexes resulting from Mr. Finlaison's obs.

Age.	Males.	Females.
20	38·74	43·27
25	36·25	40·01
30	33·39	36·65
35	30·24	33·29
40	27·11	29·90
45	23·86	26·44
50	20·52	22·98
55	17·40	19·55
60	14·41	16·16
65	11·54	12·95
70	9·07	10·14
75	6·99	7·70
80	5·22	5·68
85	3·92	4·17
90	2·78	2·93

Note.—These expec. were not given in the orig. obs. by Mr. John Finlaison; but were given by Mr. A. G. Finlaison in his Rep. 1860, wherein, reviewing the results of the preceding T., he says:

> If the foregoing cols. are compared with each other, sex for sex, some remarkable contrasts are presented. In the first place it will be found that the mort. of the male sex, throughout life, is greater at every age than that of the female. This characteristic had long been suspected, perhaps from the time of Kersseboom, but it had not by any means been admitted at the period when the above obs. was framed. That Dr. Price and Joshua Milne evidently thought the distinction in the respective prob. of life of the two sexes slight, and

of no moment, is manifest by their several T. of Mort., in which the male and female data are compounded to form a set of results which is applicable to neither case.

He continues:

> But not only is the mort. of the male sex higher throughout than that of the female in Mr. Finlaison's obs., but it also presents a peculiarity, at the age of 23, which is present in so many other obs., as to appear to be a law of nature. This feature consists in a marked increase of the mort. at the particular age mentioned, which mort. afterwards diminishes to again re-augment to the same extent at an age long subsequent, viz. the age of 48. The occurrence of a similar climax in the life of the mariner at the age of 32 has also been shown by separate obs. drawn by different observers from independent sources. *This peculiarity, however, does not exist in the female T. of Mort.* Nor is this remarkable variation altogether unimportant: for it militates against a theory supported by one or two eminent mathematicians, to the effect that mankind dies in the order of a symmetrical curve. Mankind, however, does not do so, as far as obs. informs us. Again, the respective chances of life, when displayed in the form commonly called the expec., or mean duration of life, and also when thrown into the still more practical shape of the money value of a life annu., certainly present a striking superiority in favour of the female sex. In childhood—that is at 8 years of age—the female life is computed to possess 5½ years greater mean duration of life than the male; in womanhood, that is at 28 years of age, 4½ years; at the age of 58, 3½ years; and in old age, viz. 78 years of age, 1½ years. (See 1860.)

In 1829, also, Mr. James J. Duncan pub.: *T. of the Prob. and Expec. of Male and Female Life in Glasgow; and of the Value of Annu. on Single Lives at all Ages, distinguishing the Sexes*, etc. The author says:

> In regard to what is advanced respecting the pop. of Glasgow, I have not adverted to the division of that pop. into males and females. It is now pretty generally admitted by those acquainted with this subject that all T. must be defective which do not keep this distinction in view. The one sex is subject to casualties to which the other is little or not at all exposed. Their habits of living are different; their constitution is essentially different; therefore a law of mort. which may be perfectly applicable to the one may not be at all applicable to the other: and many are of opinion that even in regard to the different periods of life, the one sex at certain ages is liable to disease and danger to which the other sex is not at all exposed: it being affirmed that in females a greater proportional mort. is observable between the ages of 25 and 30, and 45 and 50, than in males, or than in females at any other ages; so that not only in regard to the whole duration of life, but in regard to the particular periods of which that duration is made up, a most material difference is said to exist in the comparative mort., not only of the two sexes, but of the different ages of the same sex.
>
> The following T., constructed on this principle of the division of the sexes, will show how far this opinion is, and how far it is not, capable of being supported, in regard to this district of the country. They point out the pop. and the mort. at the different ages for the different sexes; they show their different expec., prob., and values; and whilst from them it will be observed, that at all ages the value of an annu. is greater when it depends on the life of a female than on that of a male; at the same time, it appears *that at the ages which are said to be so peculiarly fatal to female life, in Glasgow the contrary appears to be the fact.* It will be observed that from the age of 15 upwards the proportional mort. is decidedly against the males. And while the male mort. appears to be greater from the age of 23 to 29 than for some years either before or after these ages, on the other hand the female mort. advances slowly and gradually, and shows no remarkable increase, either at these or any other ages.

This following is an abstract of his expec. for the two sexes:

Age.	Male.	Female.	Age.	Male.	Female.
0	34·12	36·64	55	13·93	15·51
5	44·45	47·35	60	11·29	12·79
10	42·27	45·24	65	8·73	10·22
15	38·58	41·78	70	6·75	7·93
20	35·13	38·07	75	5·03	6·40
25	32·16	34·50	80	4·16	5·24
30	29·40	31·23	85	2·98	4·22
35	26·29	27·99	90	1·50	3·15
40	23·16	24·71	95	...	2·50
45	19·96	21·43	99	...	0·50
50	16·86	18·31			

Mr. Geo. Farren, in his *Obs. on the Laws of Mort. and Disease, and on the Principles of Life Ins.*, 1829, in speaking of the proportion of births of male and female children, and of the preponderance of male births, says:

> But as there will be found to be constantly in existence a greater number of females than of males, an erroneous conclusion might thence be drawn, that nature had given greater powers of endurance to women than to men: this supposition would be somewhat aided by the fact that the female is subject to all the maladies which can afflict the male, *with the add. of cancer and the diseases of pregnancy peculiar to herself.* But there are many causes to reduce a male pop. from which women are exempt—anxieties of mind in worldly transactions, unwholesome occupations, voyaging, and war. If deaths from these causes could be accurately ascertained, it seems highly prob. that the proportions of male to female deaths would be found as uniform as the proportions of births in the two sexes. That human mort., without such distinction, follows a law, can be satisfactorily shown. . . .

In attempting to trace the circumstances which determine the condition of man in society, the proportion which the sexes bear to each other becomes an object of research not less curious than instructive. If the numbers of the sexes varied considerably, or if the proportion which they bear to each other was not constant, or nearly so, but susceptible of great variation, that circumstance would exert a material influence on the habits of society, which would certainly change with the changes in the numerical relations of the sexes.—*Edin. Review*, 1829.

1830.—Mr. Rankin, in his *Familiar Treatise on Life Assu. and Annu.*, etc., speaks of the "superiority of the prob. of life among females to those which males enjoy." He adds: "This superiority obtains in a greater or less degree at all ages, even from birth, but is very conspicuous in the after-ages of life." Mr. Rankin had been in a position to make extended obs. on this point. He adds: "The most obvious causes are, the comparative security of the female sex from many hazards and hardships to which the active occupations of men subject them, and the greater temperance which they practise: *but it is possible that the male constitution may be orig. more susceptible of disease than the female, for the mort. is greater even in the earliest periods of infancy.*"

In *Sweden*, at the Census of 1830, the number of females compared with that of males was as 1076 to 1000. It has been remarked that in the extreme northern countries the relative number of women seems generally to be very much greater than in countries of the temperate zone. Such is the fact in Iceland, where the proportion of females to males in the earlier part of the present century was as 1100 to 1000.

1832.—Mr. T. R. Edmonds, in his *Life T. founded upon the discovery of a numerical law regulating the existence of every human being*, etc., says:

> In all countries, and in all classes, there is a manifest difference in the mort. of the two sexes; and the difference is always in favour of female life at all ages. Taking a gross average, it may be said, that female life is better than male life in the proportion of 11 to 10. This superiority is not occasioned by any difference in the occupation of the two sexes; for, in infancy, it is as conspicuous as at any other period of life. With improved accuracy of obs. a comparison of male and female mort. may lead to some very useful results: principally, perhaps, in showing the dependence of the first and second periods of mort. on the age of puberty. So far as the existing imperfect obs. can be trusted to, there is a strong appearance of the periods of "infancy" and "manhood" terminating at an earlier age among females than among males. No existing T. affords any foundation for the belief that child-bearing produces any disturbing effect on the female rate of mort. The sensible mark, indicating that a woman has arrived at the termination of her child-bearing age, is prob. closely dependent on the year of life at which the period of "old age" commences in her class.
>
> The remote cause of the difference in the mort. of the two sexes is yet hidden among the other secrets of nature. There is known, however, a proximate cause to which it is prob. referable. Throughout the animal kingdom this general law appears to prevail—that males are more excited by given circumstances than females are. Now, all sickness is occasioned by excessive excitement (positive or negative) of some particular organ; and sickness will be the most severe in the sex subject to the higher degree of moral and physical excitement. Let any one institute a comparison between his male and female acquaintance: he can hardly fail to come to the conclusion that activity is as much a characteristic of the male as passiveness of the female sex. In the outward signs of feeling, women outdo men, and children outdo women; but neither women nor children are on that account to be esteemed as capable of more intense pleasurable or painful excitement. The most violent internal commotion is generally accompanied by a forced calmness of exterior. Those who are most ready to give vent to their feelings in words rarely exhibit much feeling or resolution in their actions. The passions of women more quickly rise, and also more quickly subside, than those of men; but the intensity and duration of excitement is much inferior. The nervous energy of the female is much less than that of the male; and her superior quickness of excitement may be accounted for on the principle that a small mass is more easily set in motion than a large mass.

Strange to say, after all this, he does not give different T. for the sexes.

M. Demonferrand constructed a T. of Mort. from the data we have already described in our art. DEMONFERRAND'S FRENCH MORT. T., extending over the 15 years 1817-32. This T., although constructed on incomplete data, is regarded as affording a very close approximation to the expec. of life in France at that period. A decennial abstract will suffice here:

Age.	Males.	Females.
0	38·33	40·83
10	47·00	47·42
20	40·00	40·08
30	34·00	33·41
40	27·00	26·58
50	19·91	19·58
60	13·25	13·16
70	8·08	8·08
80	4·75	4·75
90	3·16	3·16
100	1·33	1·33

The correspondence at the later ages is as remarkable as it is unusual.

1833.—Mr. Francis Corbaux, in his able work *On the Natural and Mathematical Laws concerning Pop., Vitality, and Mort.*, etc., says:

> The specific intensity of female life is superior to that of the male, under equal circumstances, that of age included; yielding only such superiority when an approach is made to the period of the just mentioned anomalous increase [at very advanced ages]. The difference in respect to that superiority, and referable to the birth—when the female superiority is more considerable than at most other periods—may extend in the proportion of 6 to 7, or in that of 7 to 8, according to the discriminated class amongst a whole pop. It is remarkable that external circumstances can have no influence on this result: as a similar manifestation takes place among still-born children, a much more considerable proportion of which belong to the male sex. That superior measure of orig. vitality in females, and apparently depending on circumstances of organization, rapidly decreases to the 5th, the 6th, or the 7th year of existence; the two sexes then exhibiting but a very inconsiderable difference of life's specific intensity. From that period to about the 27th year, but with a notable abridgment of this term as regards an inferior class, the female superiority re-ascends by regular gradation to an elevated *maximum*; after which a rapid decrease again takes place, terminating with the 40th year or thereabouts, when the respective intensities become nearly levelled, for any but that inferior class; and those fluctuations are obviously the result of dissimilar callings in one sex and in the other, during that important period of their active lives. The female superiority once more proceeds, constantly increasing, to about the 70th year, with an exception of the same inferior class, for which such *second maximum* is attained at about the 50th year of age; because it still retained, for that class only, a considerable elevation at the expiry of the preceding period of decline; and from this *second maximum* the superior intensity of female life gradually diminishes to about the 82nd year, when it ultimately yields that advantage to male life.

No orig. T. are given in this work.

In *New South Wales* in 1833 there were 44,688 men, and only 16,173 women.

1834.—At the Census for the Kingdom of *Denmark* taken this year the pop. consisted of 605,278 males and 618,519 females. The proportion of males to females was as 1000 to 1022—the same as it was at the Census of 1801. Among 1000 men there were 337 married, 632 unmarried, and 31 widowers. Among 1000 women there were 327 married, 587 unmarried, and 86 widows. Among 1000 men and women, 205 or one-fifth lived in towns, and 795 or four-fifths lived in the country.

1835.—Mr. T. R. Edmonds contributed to the *Lancet* a paper: *On the Law of Mort. in each County in England.* The data on which the conclusions in this paper are founded are derived from Mr. Rickman's pop. returns, 1831, already reviewed in some detail in our art. ENGLAND. Mr. Edmonds says:

> **The relative mort. of the male to the female sex between the ages of 15 and 60 years of age appears to be dependent on the mean age at which the period of "infancy" terminates. In nearly all the counties this period for males terminates at the age of 8 years, which is indicated by the fact that the mort. between 5 and 10 is 50 p.c. greater than the mort. between 10 and 15 years of age. In the majority of counties this period for females terminates at 7 years, as is indicated by the fact that the mort. at the former exceeds that at the latter interval only 20 p.c. Cornwall, Devon, Wales, and Lond. are the exceptions to this general rule: the mean terminating age for females being at 8 years or above. In these four districts the relative mort. of males to females is just the reverse of what exists in the rest of the observed territory. The gen. law appears to be, that when the minimum is attained by both sexes at the same age, the mort. of males exceeds that of females; and that when the minimum is attained half a year sooner by females than by males, the mort. of the two sexes between the ages of 15 and 60 years is equal. . . .**
>
> **It is a remarkable fact, that all the counties of England in which the mort. of females between 15 and 30 is at a maximum are situate on or near the same straight line; and that in the counties most distant from this line the mort. is at a minimum; the maximum being to the minimum in the proportion of 3 to 2 nearly. This line is a central one running in a north-west direction from Brighton to Liverpool. In Northumberland and Cornwall, the two counties most distant from each other, and from this line, the mort. is at the minimum. Sussex has been supposed to be one of the most healthy counties in England, and the mort. under the age of 5 years is as low in this as in any county. Nevertheless, it obeys the law common to other counties on the central line, and suffers the maximum mort. between the ages of 15 and 30 years. . . . .**
>
> **In the 8 classes of counties the ascending gradations in the mort. between the ages of 15 and 30 years are not so well marked among males as among females. Nevertheless, the difference between the maximum and minimum is nearly the same for each sex. In the first or most healthy class, the ann. mort. of females between the ages of 15 and 30 is 7 out of 1000 living; in the 7th or most unhealthy class, it is 10·3 out of 1000. In the same classes at the same ages for males the results are 7·5 and 10·3 out of 1000 living. On inspection of the above T. [we have not given the T. here referred to], it will be seen that the mort. of females between the ages of 15 and 30 most exceeds the mort. of males at the same age, when the mort. of females between 5 and 10 differs least from the mort. of females between 10 and 15 years. From the same T. it would appear that the mort. above the age of 60 years is nearly constant in all classes, especially among males. This result is not much to be relied upon, because the variations to be looked for are very small, and as such might be concealed by the pop. above the age of 60 years not being exactly distributed in the same manner in the different counties. There exists, however, a distinct ground for the belief that the mort. above the age of 60 years is nearly constant. . . In all E. and W. the mort. of males above the age of 60 years exceeds that of females by 3 p.c. only; in the 6 large towns the excess is 14 p.c. [TOWN LIFE.]**

The student will find much that is instructive in the paper under notice.

In the same year Dr. Casper, the widely-known German physician, pub. a Mort. T. for the city of BERLIN, in which he distinguished the mort. of the sexes, not by the expec. of life, but by the proportions of deaths. See the annexed T.

Age.	Male.	Female.
	1 death in	
0	4	4
10	222	202
20	68	88
30	56	59
40	38	50
50	25	35
60	18	24
70	12	14
80	6	7
90	6	5
100	...	1
104	...	1

1837.—Mr. Tulloch says, in *British Annals of Medicine,* 1837, that in all our West Indian colonies female life is much better than that of male among the whole negro race, there being a remarkable superabundance of females as compared with males. This has been thought to arise from the female constitution being more easily assimilated to foreign climates; prob. however the question of relative temperance has much to do with it.

1838.—Dr. A. S. Thomson, in his *Statistical Inquiry on Fever,* etc., deduced a series of results from a large mass of data obtained; and among these results were the following: "4. There is no very apparent difference in regard to one sex being more susceptible of fever than the other. 5. The ann. ratio of deaths by fever is nearly twice as great among the male as the female pop. . . 8. Attacks of fever are one-third more intense among males than females. . . 8. The prognosis of fever is one-third more favourable among females than males." [FEVER, 1838.]

1839.—The First Rep. of the Reg.-Gen. contains the following T., showing the mean ann. mort. of females in each of the 32 Metropolitan districts, as represented by the Poor Law Unions, excluding the deaths in hospitals. The females alone are shown, on the reasonable supposition that their rate of mort. is less likely to be influenced by occupations than that of males.

It was found from a comparison of the several districts that, *cæteris paribus,* the mort. increased as the density of the population increased; and where the density and the wealth of the population were relatively the same, that the rate of mort. depended upon the efficiency of the ventilation and of the means which were employed for the removal of impurities.

Districts 1 to 11.	Ann. Deaths p.c.	Districts 12 to 22.	Ann. Deaths p.c.	Districts 23 to 32.	Ann. Deaths p.c.
Whitechapel	3·908	St. Saviour .... St. Olave	2·790	Kensington............	2·190
Shoreditch	3·164			St. James	2·154
St. Giles	3·127	Clerkenwell	2·756	St. Marylebone	2·137
Bethnal Green	3·054	St. Geo. Southwark.	2·700	Islington	2·130
Bermondsey	3·046	Greenwich	2·662	St. Pancras............	2·035
East London ...... West London	3·014	Strand	2·494	Lambeth	1·994
		Poplar	2·452	London (City).........	1·980
St. George's East ...	2·970	Westminster	2·445	Camberwell............	1·814
St. Luke	2·958	Stepney	2·428	Hackney	1·814
Holborn	2·880	St. Martin-in-Fields.	2·271	St. George's, Hanover Square.........	1·785
Rotherhithe............	2·830	Newington	2·264		
Mean	3·096	Mean	2·526	Mean	2·003

Dr. Forbes Winslow is reported to have said that women were much less liable to *sudden deaths* than men, the proportion being as 10 to 18. We have not any reference to this statement at hand. We turn to the 2nd Rep. of the Reg.-Gen. for year ending 30 June, 1839. The sudden deaths regis. in that year were 3012, of which 1840 were males and 1172 females. Dr. Farr said, in reviewing these figures: "Sudden death is most frequently the result of internal hæmorrhage, but the subject is not and cannot be well understood until *post-mortem* examinations are more generally instituted in this country. Out of 10,000 males 6·5 died of sudden death or apoplexy, and 5·1 of 10,000 females. With violent deaths, which are also generally sudden, the annual mortality of males was 18·1 in 10,000, of females 9·6 in 10,000. Women have less chance of dying suddenly than men, in the proportion of 10 to 18." Convulsion includes the sudden deaths of infants.

1840.—The 2nd Rep. of Reg.-Gen., pub. this year, contained a T. of the relative mort. from 12 classes of diseases, of males and females, in 5 large towns in England, contrasted with the whole of E. and W.

Mort. per 100 *living.*

		Leeds.		Birmingham.		London.		Liverpool and West Derby.		Manchester and Salford.		England and Wales.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Epidemic, Endemic, and Contagious Diseases		·663	·646	·533	·487	·781	·704	·626	·534	·739	·702	·465	·440
Typhus		·154	·133	·114	·073	·232	·207	·226	·181	·227	·209	·126	·124
Sporadic Diseases	Of the Nervous System...	·459	·378	·312	·258	·488	·386	·597	·530	·588	·420	·366	·297
	Of the Respiratory Org.	·742	·686	1·019	·802	·851	·690	1·063	·936	1·005	·905	·619	·592
	Phthisis	·440	·477	·526	·410	·451	·377	·595	·571	·549	·548	·378	·408
	Of the Org. of Circulation	·018	·015	·062	·034	·050	·039	·034	·019	·025	·023	·027	·020
	Of the Digestive Organs	·135	·115	·225	·221	·164	·156	·214	·194	·267	·239	·136	·121
	Of the Urinary Organs	·012	·001	·015	·013	·021	·005	·010	·003	·020	·005	·018	·004
	Of the Org. of Generation	...	·049	...	·031	...	·056	...	·055	...	·066	...	·043
	Of the Org. of Locomotion	·012	·007	·021	·015	·024	·019	·017	·012	·023	·020	·015	·013
	Of the Integumentary Sys.	·002	·001	·008	·002	·005	·003	·004	·001	·004	·003	·004	·002
	Of Uncertain Seat ...	·254	·238	·258	·260	·285	·285	·253	·249	·258	·267	·296	·293
Old Age...		·165	·169	·164	·183	·188	·251	·124	·175	·146	·180	·220	·253
Deaths by Violence		·110	·046	·077	·079	·105	·045	·130	·066	·164	·065	·117	·045
All Causes		2·572	2·351	2·694	2·356	2·962	2·639	3·072	2·774	3·239	2·895	2·283	2·124
Inhabitants to a Square Mile		2,624		31,487		25,578		4,617		4,799		269	

Dr. Farr considers that some of the peculiarities here exhibited "may be legitimately ascribed to the occupations of the people."

1841.—Dr. Reid, M.D., in his *Philosophy of Death*, treats of the "Influence of Sex and Marriage on the Duration of Life," and therein he says:

> When we take into consideration the many relative differences which exist between man and woman, both regarding their physical, moral, and secular habitudes, we are naturally led to think that there must also be some difference in the general consequences of all those actions in life which are, as it were, the final purposes of our creation—all tending to bring about that great change which at last severs vitality and organization. The two sexes, from their very earliest years of childhood, differ entirely from each other, both in their mental and corporeal impressions. . . . Such differences, trifling though they may appear, show that the two are naturally different beings in respect to those instinctive attributes which are to fit them for their respective spheres in life. And as they

ascend the ladder of worldly pursuits, the life and employments of each are so very different that the two individuals can scarcely be compared as even similar creatures. They are unlike each other in their physical appearance, in many respects in their mental endowments, and above all in their general pursuits in life. Such differences in relation to all those influences which are continually affecting the system we are led *à priori* to think must lead to some differences also in relation to the various effects produced upon the corporeal frame.

He supports his argument by statistics we have already passed in review.

1842.—In the Trans. of the Brit. Asso. for this year is a Rep. by a Committee of the Asso.: *On the V. Statistics of Large Towns in Scotland;* a document of great interest and value. In it occurs (p. 202) the following passage:

> It has frequently been stated as one of the principal causes of female life being better than that of males, that the men are more intemperate in their habits than the women. Were this the case, the greatest abuse of spirituous liquors may be looked for in Edin., as the female life in that town is 0·50 p.c. better than the male life. And the most moderate use of spirituous liquors may be looked for in Perth, as the male life is only 0·20 p.c. worse than the female life in that town. In Glasgow the female life is better than the male life by 0·46 p.c.; in Aberdeen 0·48 p.c.: and in Dundee by 0·33 p.c. Were, therefore, the relative mort. of men and women as the indulgence in intoxicating liquors, and the women alike temperate in their habits in the different towns, then these figures would form a sort of index of the degree of intemperance indulged in by the men. It may be objected to this, that the number of females employed in the factories of Glasgow, Aberdeen, and Dundee may have injurious effects on female life, and make the difference in the proportion of male and female deaths in these towns to be less than it otherwise would be. As, however, the inhabitants of Edin. and Perth are more like each other in the nature of their employments, should intemperance on the part of the males be a principal cause of the difference in male and female deaths, then the proportion of intemperance should be as 5 in Edin. to 2 in Perth.

But, adds the Committee:

> Whatever may be the influence of intemperance in producing a high rate of mort., both by the direct effects it produces on the human frame and by the destitution and misery which result from it, there are too many cases of extreme destitution in the towns of Scotland, arising from causes beyond the control of the sufferers, and for which there is no adequate relief provided by law. The effect of destitution in producing disease and death seems to be admitted by all writers on the subject. Differences may arise as to the particular disease or diseases most affected by it; but all agree that where a great degree of destitution exists, there is to be found a high amount of mort. [FAMINES.] [FOOD.]

In the 4th Rep. of the Reg.-Gen., pub. 1842, there is a T. giving the mort. of females in 10 divisions of Eng., giving the mean ann. mort. p.c. by 12 classes of diseases—arranged in the order of mort. by diseases of the epidemic class, as follows:

	Classes of Diseases.	Cheshire, Lancashire.	Leicestershire, Rutlandshire, Lincolnshire, Nottinghamshire, Derbyshire.	Yorkshire.	Monmouth and Wales.	Gloucestershire, Herefordshire, Shropshire, Worcestershire, Staffordshire, Warwickshire.	Durham, Northumberland, Cumberland, Westmorland.	Middlesex (part of), Hertfordshire, Bucks, Oxon, Northampton, Huntingdon, Beds, Cambridgeshire.	Essex, Suffolk, Norfolk.	Wiltshire, Dorsetshire, Devonshire, Cornwall, Somersetshire.	Surrey (part of), Kent (part of), Sussex, Hampshire, Berkshire.	England, exclusive of the Metropolis.
	1. Epidemic, Endemic, and Contagious	·818	·622	·528	·481	·465	·423	·418	·417	·337	·293	·494
Including	*Smallpox*	·147	·079	·066	·039	·106	·039	·020	·008	·040	·016	·064
	Measles	·137	·087	·035	·023	·051	·040	·056	·060	·038	·027	·059
	Scarlatina	·246	·200	·191	·154	·061	·146	·075	·113	·047	·067	·130
	Hooping Cough	·059	·044	·044	·024	·041	·034	·055	·026	·033	·030	·040
	Typhus	·128	·130	·107	·180	·126	·089	·132	·126	·115	·087	·121
Diseases	2. Of the Nervous System	·403	·295	·380	·315	·242	·263	·229	·202	·198	·262	·285
	3. Of the Respiratory Org.	·757	·565	·554	·477	·598	·477	·595	·561	·520	·519	·577
	Including *Phthisis*	·528	·396	·391	·387	·406	·338	·433	·434	·350	·364	·409
	4. Of the Organs of Circu.	·018	·022	·020	·010	·024	·022	·025	·020	·024	·028	·022
	5. Of the Digestive Organs	·190	·141	·138	·084	·151	·140	·116	·092	·102	·130	·133
	6. Of the Urinary Organs.	·005	·005	·005	·002	·003	·004	·003	·004	·004	·003	·004
	7. Of the Organs of Generation	·068	·047	·053	·045	·043	·046	·036	·032	·029	·035	·045
	8. Of the Organs of Locomotion	·018	·013	·018	·012	·013	·012	·008	·009	·007	·009	·012
	9. Of the Integumentary System	·002	·003	·003	·003	·002	·004	·003	·004	·002	·002	·003
	10. Of Uncertain Seat	·316	·283	·280	·239	·308	·337	·380	·333	·316	·299	·308
	11. Old Age	·195	·263	·248	·305	·286	·317	·280	·304	·305	·230	·267
	12. Deaths by Violence	·053	·045	·045	·040	·056	·041	·033	·037	·045	·038	·045
	All Causes	2·846	2·303	2·273	2·013	2·194	2·089	2·127	2·017	1·892	1·849	2·193

1843.—We now, for the first time, approach the subject of female *insured life*, as distinguished from female life in general; and the scene presents a sudden and remarkable change. The Committee of Actuaries appointed in 1838 to investigate the mort. exp. of 17 contributing offices,—as fully explained in our art. EXPERIENCE MORT. T.,—this year present their Rep., and its results are in many respects startling.

The returns in which the sexes were distinguished amounted to 40,616 (out of a total of 83,905); but of these only 4202 were distinctly of female lives, and these were drawn from three classes, viz. Town, Country, and Irish. [See EXPERIENCE T. No. 1.] Again, of the 4202 ins. on females, 1145 pol. had been discontinued, and 477 had died, leaving 2580 at the date of obs.; whereas of males, 10,099 ins. had been discontinued, 3451 had died, leaving 22,882 remaining at date of obs.

The data arranged in tabular form came out as follows, but columns are added for comparing its results with three other well-known T. of Mort.; and for the sake of comparison, we add the results for *Males*:

Completed years of age.	FEMALES.					MALES.				
	No. exposed to the risk of mort. (Years.)	Actual Deaths.	Computed Deaths by			No. exposed to the risk of mort. (Years.)	Actual Deaths.	Computed Deaths by		
			Northampton T.	*Carlisle* T.	Davies's *Equitable Exp.*			*Northampton* T.	*Carlisle* T.	Davies's *Equitable Exp.*
10 and under 20	810	4	9	5	4	2,375	19	25	15	13
20 ,, 30	2009	33	32	16	16	19,101	166	307	154	160
30 ,, 40	3870	61	72	41	44	60,843	604	1138	644	685
40 ,, 50	5387	85	129	77	77	61,646	900	1457	878	871
50 ,, 60	5207	115	172	95	122	38,054	916	1240	679	876
60 ,, 70	3223	119	153	128	120	15,094	637	705	591	548
70 ,, 80	642	56	51	47	41	2,420	199	193	177	154
80 ,, 90	19	4	3	3	3	82	10	14	12	12
90 & upw.	0	0	0	0	0	5	0	2	2	2
Totals	21,167	477	621	412	427	199,620	3451	5081	3152	3321
Proportion of actual to computed Deaths.		1·000	1·302	·864	·895		1·000	1·472	·913	·962

The resulting T. of Mort. was the following:

FEMALE LIVES (unadjusted).					MALE LIVES (unadjusted).				
Completed Age.	Number exposed to the risk of mort.	Deaths.	Prob. of surviving one year.	Expec. of Life.	Expec. of Life.	Number exposed to the risk of mort.	Deaths.	Prob. of surviving one year.	Completed Age.
0	·0	0	...	...	...	·0	0	...	0
1	·0	0	...	...	...	·0	0	...	1
2	·5	0	...	...	...	·5	0	...	2
3	1·5	0	...	...	...	2·5	0	...	3
4	3·0	0	...	...	...	5·0	0	...	4
5	6·0	0	...	...	...	10·5	0	...	5
6	11·0	0	...	...	...	18·5	0	...	6
7	14·5	0	...	...	...	31·0	0	...	7
8	15·5	0	...	...	...	50·0	0	...	8
9	24·0	0	...	...	...	79·0	0	...	9
10	35·0	0	...	...	...	98·0	0	...	10
11	45·0	0	...	...	...	128·0	0	...	11
12	52·0	0	...	...	...	151·0	2	...	12
13	60·5	1	...	...	...	181·0	2	...	13
14	62·5	2	...	...	...	213·5	3	...	14
15	72·0	0	...	...	...	241·5	1	...	15
16	90·0	0	...	...	...	275·0	2	...	16
17	108·0	0	...	...	...	322·0	0	...	17
18	128·5	1	...	...	...	353·5	6	...	18
19	156·5	0	...	...	...	411·5	3	...	19
20	189·5	6	·968	35·86	39·84	435·5	6	·988	20
21	185·0	6	·967	36·01	39·29	655·5	7	·989	21
22	170·5	1	·994	36·20	38·70	851·5	6	·992	22
23	177·0	2	·988	35·41	37·98	1138·5	13	·988	23
24	174·5	3	·982	34·81	37·41	1525·9	9	·994	24
25	181·0	2	·988	34·41	36·63	1933·5	13	·993	25
26	197·5	2	·989	33·79	35·88	2401·5	24	·990	26
27	215·5	6	·972	33·14	35·23	2864·5	32	·988	27
28	244·0	4	·983	33·07	34·63	3319·5	32	·990	28
29	274·0	1	·996	32·61	33·96	3876·0	24	·993	29
30	309·5	3	·990	31·73	33·17	4459·0	37	·991	30

Female Lives (unadjusted).					Male Lives (unadjusted).				
Completed Age.	Number exposed to the risk of mort.	Deaths.	Prob. of surviving one year.	Expec. of Life.	Expec. of Life.	Number exposed to the risk of mort.	Deaths.	Prob. of surviving one year.	Completed Age.
31	325·5	5	·984	31·04	32·44	4949·5	44	·991	31
32	349·0	4	·988	30·51	31·73	5424·0	32	·994	32
33	367·0	9	·975	29·86	30·92	5875·0	56	·990	33
34	377·5	6	·984	29·60	30·21	6227·5	64	·989	34
35	402·5	11	·972	29·07	29·52	6505·5	77	·988	35
36	408·5	6	·985	28·88	28·87	6722·5	67	·990	36
37	434·0	5	·988	28·30	28·15	6867·5	81	·988	37
38	436·0	6	·986	27·62	27·49	6872·5	82	·988	38
39	460·5	6	·986	27·00	26·81	6940·0	64	·990	39
40	496·5	9	·981	26·36	26·06	6914·0	95	·986	40
41	515·0	10	·980	25·84	25·42	6755·5	77	·988	41
42	539·5	5	·990	25·34	24·70	6644·0	79	·988	42
43	528·5	8	·984	24·57	24·00	6576·0	95	·985	43
44	523·5	6	·988	23·94	23·34	6435·0	79	·987	44
45	543·0	9	·983	23·21	22·63	6218·5	97	·984	45
46	549·0	9	·983	22·60	21·98	5923·0	73	·987	46
47	549·0	5	·990	21·97	21·24	5635·0	99	·982	47
48	566·0	14	·975	21·16	20·62	5385·5	120	·977	48
49	577·0	10	·982	20·69	20·08	5159·0	86	·983	49
50	575·5	12	·979	20·05	19·41	4945·5	82	·983	50
51	565·0	10	·982	19·46	18·73	4692·5	81	·982	51
52	555·0	15	·972	18·80	18·05	4481·5	87	·980	52
53	543·5	8	·985	18·31	17·40	4196·5	91	·978	53
54	520·0	6	·988	17·58	16·77	3927·5	102	·974	54
55	515·0	9	·982	16·78	16·21	3647·0	101	·972	55
56	505·0	10	·980	16·07	15·66	3380·0	93	·972	56
57	487·0	13	·973	15·39	15·09	3130·5	77	·975	57
58	483·0	16	·966	14·79	14·45	2925·0	109	·962	58
59	458·0	16	·965	14·28	13·99	2728·0	93	·965	59
60	436·5	10	·977	13·78	13·47	2468·0	94	·961	60
61	410·0	10	·975	13·10	12·99	2199·0	80	·963	61
62	378·5	14	·963	12·41	12·46	1933·5	69	·964	62
63	367·0	7	·980	11·87	11·90	1720·5	54	·968	63
64	345·5	16	·953	11·09	11·27	1580·5	83	·947	64
65	318·5	12	·962	10·60	10·87	1402·0	66	·952	65
66	305·0	17	·944	10·00	10·38	1225·0	64	·947	66
67	258·5	8	·969	9·56	9·93	1016·5	42	·958	67
68	218·0	13	·940	8·85	9·33	848·5	43	·949	68
69	185·5	12	·935	8·38	8·81	700·0	42	·940	69
70	141·0	7	·950	7·93	8·34	590·0	38	·935	70
71	113·5	5	·955	7·31	7·88	445·0	31	·930	71
72	107·0	9	·915	6·63	7·43	357·5	26	·927	72
73	83·0	7	·915	6·19	6·97	285·5	24	·915	73
74	63·5	7	·889	5·72	6·57	227·0	16	·929	74
75	44·0	8	·818	5·37	6·03	174·0	17	·902	75
76	31·5	2	·936	5·45	5·63	134·0	19	·858	76
77	26·0	4	·846	4·78	5·48	99·5	12	·879	77
78	21·5	5	·767	4·56	5·16	66·5	10	·849	78
79	11·0	2	·818	4·80	4·99	41·0	6	·853	79
80	7·0	2	...	4·75	4·75	24·0	1	...	80
81	5·0	0	...	...	...	17·5	5	...	81
82	4·0	1	..	...	...	10·0	0	...	82
83	2·0	1	...	...	...	10·5	0	...	83
84	1·0	0	. .	...	...	7·5	3	...	84
85	...	...	...	...	...	3·0	1	...	85
86	...	...	...	...	...	2·5	0	..	86
87	...	...	...	...	...	3·0	0	...	87
88	...	...	...	...	...	2·0	0	...	88
89	...	...	...	...	...	1·5	0	...	89
90	...	...	...	...	...	1·0	0	...	90
91	...	...	...	...	...	1·0	0	...	91
92	...	...	...	...	...	1·0	0	...	92
93	...	...	...	...	...	1·0	0	...	93
94	...	...	...	...	...	1·0	0	...	94

The difference between *male* and *female* life—to the disadvantage of the latter—constituted one of the great features of the entire investigation; and the male life came out less favourable than in some other T. Speaking generally of the results of the T. just given, the average duration of male life under 36 years is better than female life; from 36 to 61 years the average of female life is better than male life, but after 61 the expec. is again greater for males. It was thought by the Committee that this might arise from the paucity of the number of females under obs.

Mr. A. G. Finlaison [in his Rep. 1860] considers that the explanation of this unusual result may be found in the hypothesis, that above the age of 35 women may have some voice in the ins. of their own lives; below, little or none! He adds: "The remarkable relation borne by the female expec. of life to that of the male, and the ratio of the female mort. to the male mort., show *that female assured life belongs to an exceptional class.*" And then, in view of the differing results, more particularly in regard to female life, shown by this T. and Mr. John Finlaison's T. in 1827, he remarks:

> But the fact is that from the tendency of the interests concerned, assured life is essentially different in its nature from annuitant life. The contract in one case is entered upon with one event, that of death, more or less in apprehension. In the other case the contract is effected in the hope of the absence of such event until the latest moment allowed by nature. The minute gravitation of these hopes and fears in opposite directions seems to produce their corresponding results, and appears also to disclose the weakness of any selection other than that which is self-instinctive. [EXP. T. NO. 1.] MORT. T., 1843.]

The direct result of this inquiry was to induce the L. offices to reconsider the subject of female lives; and the lower rates of prem. which had been charged by some offices were abandoned; while also more strict medical selection was enforced.

As the data upon which the preceding T. is based was drawn from the F. lives included in several classes, it will be instructive to see how it compares with the general results of those classes stated separately. We add the male column for completeness of reference:

Age	Males.	Females.	Town Males & Females.	Country Males & Females.	Irish Males & Females.
20	39·84	35·86	41·22	40·33	34·95
25	36·63	34·41	38·56	37·55	31·94
30	33·17	31·73	34·84	34·20	29·71
35	29·52	29·07	31·12	30·78	26·30
40	26·06	26·36	27·53	27·38	23·36
45	22·63	23·21	24·08	23·83	20·30
50	19·41	20·05	20·58	20·48	17·76
55	16·21	16·78	17·15	16·96	15·04
60	13·47	13·78	14·23	14·03	12·67
65	10·87	10·60	11·18	11·44	10·19
70	8·34	7·93	8·61	8·48	7·92
75	6·03	5·37	6·29	5·55	5·97

The results are very remarkable, and worthy of the most careful study. The "Town" M. and F. combined are better at all ages than the M. of the whole classes combined. The same may be said of the "Country" M. and F. combined. Thus it seems that the Irish M. and F. yielded the depreciating element. Here the combined M. and F. show a shorter expec. than the F. of the combined classes. Compared with the Town M. and F. combined, the contrast of the "Irish" M. and F. is most remarkable. Can we wonder that many of the offices placed their Irish lives in separate classes: giving them only such parti. in profits as the class produced? [IRISH LIVES.]

Still another remarkable incident characterizes this year. The 5th Rep. of the Reg.-Gen. contained the first Mort. T. ever deduced from the national returns of this country—these being the census returns of 1841, and the recorded deaths of that year. This is known as the *English T.* No. 1, of which we have already given a detailed account under that head. It gave the mort. for each sex; but it did not sustain the great superiority which other obs. had claimed for female life. At birth it showed the expec. to be about 2 years in favour of females; at 20 the figures were M. 39·88, F. 40·81; at 50, M. 20·02, F. 21·07. During the whole period of life (after the first year) the difference in expec. does not exceed 1·17 years. "This difference (says the Reg.-Gen.) is important; *but the T. disposes of the highly exaggerated opinions as to the superior vitality of the female sex, derived from partial obs.*"

Dr. Farr, the compiler of the T., reviews the results of Mr. Finlaison's, and of the *Experience*, and some other T., and then observes: "It is scarcely necessary to add that, although no such great difference in the longevity of the two sexes exists in nature, it can readily be conceived that men and women *may be selected* whose lives differ, or appear from an incomplete series of obs. to differ, as much as the lives of the M. and F. in the *Actuaries'* and *Mr. Finlaison's* T."

The T. itself, of which we have already given a detailed account under ENGLISH LIFE T. No. 1, showed the relative expec. of the sexes. There are in the same vol. three other

T, in which the expec. of the sexes is given for quinquennial periods, viz. for *Surrey*, *Liverpool*, and the *Metropolis* respectively, all computed by Dr. Farr upon the returns of 1841—and it will be instructive to review the several comparative results as shown in the following T.:

Age.	ENG. AND WALES.		SURREY.		LIVERPOOL.		METROPOLIS.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
0	40·19	42·18	44·0	45·8	24·7	26·7	35·0	38·4
5	49·64	50·38	51·3	51·7	42·2	43·4	46·3	49·7
10	47·08	47·81	49·0	49·0	40·7	41·6	43·6	47·1
15	43·35	44·13	45·3	45·4	36·9	38·0	39·6	43·0
20	39·88	40·81	41·7	41·9	33·4	34·3	35·8	39·1
25	36·47	37·52	38·2	38·4	30·0	30·7	32·3	35·3
30	33·13	34·25	34·6	35·0	26·6	27·4	28·8	31·8
35	29·83	30·99	31·2	31·1	23·3	24·3	25·4	28·2
40	26·56	27·72	27·5	28·1	21·0	21·5	22·3	25·0
45	23·30	24·43	24·1	24·2	17·9	18·4	19·1	21·5
50	20·02	21·07	20·8	21·1	15·5	16·6	16·5	18·4
55	16·68	17·63	17·4	17·3	...	...	13·6	15·1
60	13·50	14·40	14·1	14·7	...	...	...	...
65	10·86	11·52	11·2	11·5	...	...	...	...
70	8·51	9·03	8·8	9·3	...	...	...	...
75	6·53	6·92	...	...	...	...	...	...
80	4·92	5·20	...	...	...	...	...	...
85	3·64	3·83	...	...	...	...	...	...
90	2·68	2·77	...	...	...	...	...	...
95	2·22	2·06	...	...	...	...	...	...

In E. and W. the female lives exceed the male lives by about a year—except at birth, when the difference is greater. In *Surrey* the females from the age of 1 year and upwards live longer than the males. In the *Metropolis* the females live longer than the males by some 2 or 3 years. The Reg.-Gen., reviewing these results, thinks that if the majority of the annuitants before 1829 were inhabitants of Lond., and more than a due proportion of the women lived in the country, "such a discordant result" as was shown by Mr. Finlaison's T. in 1829 would be produced. "As an example, the expec. of life among males in the Metropolis may be compared with the expec. of females in Surrey."

Again, in the same year (1843), the Rep. of the Irish Census Commissioners was pub., and therein was contained T. of Mort. for the Rural Districts, and for the Civil or Town Districts; and also for the City of Dublin. The separate mort. of the sexes is given in each case, and the expec. at quinquennial periods is shown in the following abstract T.:

Ages.	Rural Districts.		Town Districts.		City of Dublin.		Ages.
	Males.	Females.	Males.	Females.	Males.	Females.	
0	29·58	28·90	23·99	24·21	23·85	27·53	0
5	41·08	39·76	35·19	35·35	38·48	40·13	5
10	39·30	37·94	33·70	34·23	37·24	38·62	10
15	36·19	35·11	30·34	31·28	33·42	34·99	15
20	33·81	32·72	27·65	28·78	30·06	31·89	20
25	31·90	30·56	25·39	26·63	27·09	29·24	25
30	29·27	28·22	22·99	24·40	24·41	26·62	30
35	26·35	25·64	20·63	22·26	21·95	23·92	35
40	23·39	22·99	18·54	20·19	19·76	21·49	40
45	20·41	20·22	16·58	18·17	17·71	19·16	45
50	17·44	17·29	14·56	15·93	15·56	16·60	50
55	14·79	14·41	12·66	13·57	13·34	14·10	55
60	12·71	12·29	10·98	11·83	11·50	12·19	60
65	10·89	10·77	9·62	10·53	10·03	10·69	65
70	9·04	9·17	8·28	9·20	8·40	9·27	70
75	7·22	7·33	6·91	7·55	6·80	7·97	75
80	5·95	6·03	6·14	6·53	5·65	6·87	80
85	5·31	5·80	5·58	6·52	5·00	5·68	85
90	4·34	4·98	4·36	5·82	4·08	4·24	90
95	2·43	2·59	2·44	2·97	2·50	2·26	95
100	0·49	0·50	...	...	...	...	...

Here we have the curious result that the males appear to live longer than the females in the Rural Districts, and the females longer than the males in the Town Districts.

In 1843, also, a Select Parl. Committee on Joint-Stock Cos. sat, and examined various members of the actuarial profession. Mr. Charles Ansell, while under examination, said: My own opinion, for a long series of years, has been that female life, as it exists on the books of ins. offices, was very much worse indeed than male lives: *amounting almost to a motive for refusing the ins. of them at all;* and I believe the experience of others has been the same. In the case of annu. it may be perfectly true that female lives are better; and it may be true that the lives of the females of the pop. at large are better. It would therefore lead to the suspicion of fraud in the ins. of female life: that would rather be the deduction than that female life was worse than male. I should believe that female life taken on the average presents a greater amount of longevity than male.

Mr. Arthur Morgan said: There is a fact which contradicts the general impression upon that subject, and that is, that of two distinct Sos. for the benefit of widows, which have come under my obs., the affairs of which have been investigated both by my father and myself for many years, it is a singular thing, in both these instances the female life does not appear to be better than the male.

Mr. Ansell thereupon said: I have had a recent opportunity of learning the result of a large collection of mort. experience in the So. of Friends, or Quakers, where the mort. of the two sexes is shown, and there the difference is exceedingly small. *Question.* Is the number of female lives ins. greater than that of male? Mr. Ansell: Not so large; about one in seven. The number of lives on which annuities are granted very much preponderates in favour of females; but those in L. ins. form but a very small proportion.—*Q.* Is there not a preponderance of female lives in cases of leases upon lives? Mr. Ansell: I think not. Independently of the bus. of the *Atlas,* I have had many opportunities of seeing statements of lives in leases, and I believe the preponderance is very greatly in favour of males, though in the present day prudent people do sometimes select female lives, not altogether prob. from the supposed increase in longevity in respect to females, as it is now found that in insuring lives in leases, parties frequently run considerable risk, and have to pay add. prem. if young men become soldiers or sailors.—*Q.* There is less contingency on the individual life in the case of the female? Yes.—*Q.* Do you make any difference in the rate of prem. between male and female lives? Mr. Ansell: The only difference is that two or three offices charge less prem. on female lives; but if a difference be made, it ought to be that the females should be charged a great deal more, because they are found from experience to die more rapidly than males when their lives are insured. Nobody has, I believe, investigated the cause, but the two sexes present a most important difference at some ages,—something like the relation of two to one.

Mr. Morgan: If you were to divide female life into different periods, it would vary considerably in regard to mort. After the age of 50 I should say the female life was better than the male.

During this inquiry it transpired that the *Equitable* So. experience was unfavourable to female life.

The mathematical questions connected with the proportion of the sexes born have been investigated by Laplace, Poisson, Babbage, and other distinguished philosophers, and one of the results which has attracted most attention and created most speculation is that the proportion of boys is greatest among legitimate children. In France, for instance, the boys are to the girls born as 106·4 to 100·0; but among illegitimate children the proportion is 104·4 to 100·0. A return in the 5th Rep. of the Reg.-Gen. (1843) gave a result exactly the reverse. Of the legitimate births the boys were to the girls as 105·4 to 100·0; of illegitimate births 108·0 to 100·0; and although small numbers were observed upon, the ratio differed little in two quarters. Much information bearing upon this question has been given under BIRTHS.

1845.—In the 6th Rep. of Reg.-Gen. annu. and ins. values for female lives under the *English* L. T. No. 1, are given, and some technical explanation regarding "mean future lifetime," etc., not material to our present purpose.

1846.—Early in this year Dr. W. A. Guy read a paper before the Statis. So. of Lond.: *On the Duration of Life among the English Gentry, with add. obs. on the Duration of Life among the Aristocracy* [*Stat. Journ.* ix. p. 37.] The inquiry embraced the ages at death of M. and F. dying aged 21 and upwards as recorded in a series of "County Histories," arranged in 3 classes, viz. 1. The male members of the families of the Gentry. 2. *The Females of the Upper Classes, including the Peerage, and Baronetage, as well as the Gentry.* 3. The members of the several professions. The number of the 1st class under obs. was 2455; of the 2nd, 1872; and of the 3rd, 699. The result, as shown by the expec., is given in the T. at the top of next page; but we add those of the Peerage and Baronetage—the result of a former investigation by Dr. Guy—for the purpose of comparison.

It is seen by this that the females of the higher classes at 20 years of age have a lower expectation of life than the males of either the aristocracy or gentry; but from 25 to 75 years of age inclusive, the expectation for females is more favourable than that for either of the other classes. At 90, however, the balance turns in favour of the male members of the aristocracy, and at 80 in favour of the gentry. The expectation of professional men, as compared with that for females, is higher at 30 and 35 years and after 80; but in the intermediate period it is in favour of females. From 40 to 70 years of age inclusive, the four classes stand in regard to the expec. of life—beginning with that which enjoys the most favourable expec.—in the following order: females, professional men, gentry, aristocracy.

Age.	Peerage and Baronetage	Gentry.	Professions.	Females.
20	38·5	37·3	...	37·0
25	34·6	34·4	...	34·7
30	30·9	31·2	33·9	32·1
35	27·4	28·0	29·9	29·5
40	24·5	24·9	26·0	27·1
45	20·9	21·6	22·4	24·1
50	17·9	18·4	18·9	20·9
55	15·2	15·5	15·6	17·7
60	12·6	12·8	12·8	14·6
65	10·2	10·5	10·5	11·8
70	8·2	8·5	8·6	9·4
75	6·5	6·9	6·8	7·4
80	5·1	5·8	5·3	5·7
85	4·0	4·8	4·2	4·1
90	3·4	4·0	3·2	2·8
95	2·4	3·2	2·0	2·1
100	1·2	1·6	0·5	0·5

But Dr. Guy extended his inquiries still further, viz. to the "duration of life among the higher classes, as deduced from the obituaries of the *Ann. Register*, 1758 to 1843." The numbers in each class dying above 21 years of age, according to the record so obtained, was: "Royal houses," males 102, females 60; aristocracy, 1239; gentry, 1787; females, 1907. These form a distinct set of obs. from those just given; and the resulting T. shows *not the expec., but the average age* attained by such of the several classes as reached the ages stated in column 1. A column is added showing the average age attained by such of the Kings of England (21 in number) since the Conquest as died natural deaths:

Age at Death.	Kings of England.	Royal Houses.		Aristocracy.	Gentry.	Females of the Upper Classes.	English Life T. No. 1.	
		Males.	Females.				Males.	Females.
21 and upwards	...	62·11	61·18	65·31	67·59	67·18	68·60	69·80
26 ,,	...	63·31	61·81	66·19	68·97	69·31	69·68	70·88
31 ,,	59·19	64·06	63·00	67·31	70·22	70·79	70·80	71·98
41 ,,	60·45	65·25	66·74	69·13	72·03	74·00	73·12	74·20
51 ,,	64·12	68·54	69·11	71·69	74·00	76·56	75·64	76·58

This T. in its main features strongly confirms the results of the former T. drawn from the Country Histories. It shows that though the duration of life among the females of the higher class is considerably longer than that of males among the same class, "still that the former are exposed in early adult life to dangers which may reduce the averages for the early periods even below the standard of the other sex."

The 7th Rep. of the Reg.-Gen., pub. 1846, contained a Mort. T. for *Manchester*, based upon the census of 1841, and on the recorded deaths of that year. The T. is limited to male lives; but some per-centages of the ann. mort. for males and females are given. As, however, these do not admit of comparison with the results of the other T. here noticed, we do not reproduce them. In all its general features the mort. of Manchester corresponds very much with that of Liverpool.

In this same vol. are some interesting calculations regarding the increase of the pop. in the 3 divisions of the Kingdom. The female pop. (which is less affected by emigration than the male pop.) had increased in England at the ann. rate of 1·335 for the decennium 1831-41, which was rather less than the rate of increase from 1801 up to 1831. For the U.K. (embracing the three divisions of the Kingdom) the rate of increase in the decennium 1831-41 was at the ann. rate of 1·028 p.c. for females, and 1·033 p.c. for males—a difference exceedingly slight as between the sexes; but the rate of increase in the entire U.K. is seen to be much less than the rate of increase in Eng. The total pop. of the U.K. at the census of 1841 was 13,301,711 males and 13,742,528 females. In the decennium the males had increased 1,301,266, the females 1,338,551. There are many other facts of interest on this subject, and the differing circumstances of the two sexes are duly regarded.

1847.—In 1837 Herr R. Brune pub. in Berlin, a T. of the Mort. Experience of the *Prussian Widows Annu. So.* for the 58 years 1776—1834, comprising obs. on no less than 31,500 marriages. But in 1847 a later ed. of the same T. appeared in the *Allgemeine Versicherungs-Zeitung*. This extended over the period of 69 years 1776—1845; and gives the mort. experienced by each sex. But while the males were subjected to a strict medical examination, the females were subjected to no examination whatever: this being the usual course in asso. granting survivorship annu. to widows. The T., in regard to male lives, enjoys considerable repute in Germany. We shall give it under GERMAN MORT. T. But the T. regarding female lives we propose to give here, for purposes of comparison.

T. of Mort according to the Exp. of the Prussian Widows Annu. So. for 69 *years,* 1776 *to* 1845—FEMALES.

Age.	Living at the Beginning of the Year.	In the course of the Year		TABLE OF MORT. DEDUCED THEREFROM.			
		With-drawn.	Died.	Living.	Died.	Prob. of dying in a Year.	Expec.
16	121	...	1	10,000	162	·01620	40·56
17	430	4	9	9,838	156	·01586	40·22
18	1,139	13	20	9,682	149	·01539	39·86
19	2,411	9	37	9,533	141	·01476	39·47
20	4,061	11	57	9,392	132	·01405	39·06
21	6,074	25	82	9,260	124	·01339	38·61
22	8,266	40	96	9,136	117	·01281	38·12
23	10,503	43	129	9,019	111	·01231	37·61
24	12,792	46	162	8,908	106	·01190	37·08
25	14,901	67	177	8,802	102	·01159	36·52
26	16,913	70	218	8,700	100	·01149	35·94
27	18,584	52	199	8,600	99	·01151	35·35
28	20,090	64	228	8,501	99	·01165	34·76
29	21,299	76	253	8,402	98	·01166	34·16
30	22,245	77	247	8,304	97	·01168	33·56
31	22,956	66	277	8,207	97	·01182	32·95
32	23,411	69	259	8,110	96	·01184	32·34
33	23,803	65	295	8,014	96	·01198	31·72
34	23,919	65	280	7,918	95	·01200	31·10
35	23,926	54	296	7,823	94	·01202	30·47
36	23,817	51	284	7,729	93	·01203	29·83
37	23,577	64	304	7,636	93	·01218	29·19
38	23,191	47	301	7,543	92	·01220	28·54
39	22,757	48	259	7,451	90	·01208	27·89
40	22,167	36	251	7,361	88	·01195	27·22
41	21,422	49	266	7,273	86	·01182	26·55
42	20,586	44	237	7,187	85	·01183	25·86
43	19,609	41	211	7,102	84	·01183	25·16
44	18,673	40	217	7,018	84	·01197	24·46
45	17,706	33	237	6,934	85	·01226	23·75
46	16,744	19	231	6,849	87	·01270	23·03
47	15,795	22	199	6,762	88	·01301	22·32
48	14,925	28	213	6,674	90	·01348	21·61
49	13,961	20	162	6,584	92	·01397	20·90
50	13,252	8	205	6,492	95	·01463	20·19
51	12,547	18	168	6,397	98	·01534	19·48
52	11,879	10	225	6,299	102	·01619	18·78
53	11,106	23	195	6,197	107	·01727	18·08
54	10,416	8	195	6,090	114	·01872	17·39
55	9,794	3	191	5,976	123	·02058	16·71
56	9,229	12	208	5,853	131	·02238	16·05
57	8,617	6	205	5,722	139	·02429	15·41
58	8,034	8	221	5,583	146	·02615	14·78
59	7,505	6	210	5,437	151	·02777	14·16
60	6,989	2	197	5,286	156	·02952	13·55
61	6,516	3	210	5,130	161	·03139	12·95
62	5,578	2	220	4,969	167	·03361	12·35
63	5,155	2	195	4,802	175	·03644	11·76
64	4,725	2	206	4,627	185	·03998	11·19
65	4,358	2	198	4,442	196	·04413	10·64
66	3,956	3	216	4,246	208	·04900	10·10
67	3,573	3	224	4,038	219	·05423	9·60
68	3,212	1	211	3,819	228	·05970	9·12
69	2,890	3	194	3,591	235	·06545	8·67
70	2,540	2	214	3,356	239	·07123	8·24
71	2,252	..	196	3,117	240	·07698	7·83
72	1,950	...	193	2,877	240	·08340	7·04
73	1,696	...	177	2,637	239	·09066	7·08
74	1,456	..	162	2,398	235	·09804	6·73
75	1,238	1	153	2,163	228	·10537	6·41
76	1,024	1	150	1,935	217	·11223	6·11
77	853	...	120	1,718	202	·11765	5·82

Age.	Living at the Beginning of the Year.	In the course of the Year		TABLE OF MORT. DEDUCED THEREFROM.			
		With-drawn.	Died.	Living.*	Died.	Prob. of dying in a Year.	Expec.
78	692	...	103	1,516	186	·12270	5·52
79	569	...	93	1,330	171	·12853	5·22
80	569	...	71	1,159	159	·13717	4·92
81	462	...	73	1,000	151	·15100	4·63
82	366	...	68	849	143	·16835	4·36
83	273	...	50	706	131	·18553	4·14
84	216	...	38	575	114	·19841	3·97
85	173	...	36	461	95	·20619	3·83
86	133	...	29	366	77	·21053	3·70
87	88	...	17	289	61	·21097	3·55
88	68	...	17	228	48	·21277	3·36
89	49	...	9	180	39	·21645	3·13
90	34	...	8	141	33	·23419	2·85
91	25	...	9	108	28	·25907	2·57
92	14	...	5	80	23	·28736	2·30
93	9	...	2	57	19	·33333	2·03
94	7	...	2	38	14	·36765	1·78
95	5	...	1	24	10	·41667	1·54
96	4	...	2	14	7	·50000	1·30
97	2	...	1	7	4	·57143	1·07
98	1	...	...	3	2	·66666	·83
99	1	...	1	1	1	1·00000	·50

As will be supposed, married men only were admitted to the So. ; and so married women and widows, and not unmarried girls, came under obs. in the female lives. Now then for the result, which is, *that at ages under* 40 *the mort. was less by one-third than that in the Gotha Life Assu. Bank*, with which it has been specially compared, as being also founded upon German lives. (See 1855.) Beyond 40 the mort. is greater for some ages ; and finally upon an average it is higher than the *Gotha*.

The *British Empire Mut.* founded 1847, charged a lower scale of prems. for female lives, and continued the scale for some 10 years, when it was abandoned. The experience of the Co. in regard to female lives has not been given separately.

1849.—The 9th Rep. of Reg.-Gen. (pub. 1849) contains an elaborate series of T. showing from the returns of deaths in the 7 years 1838–44, and from the Census returns of 1841, the mort. of males and females at *different ages* in E. and W., as well as severally in the 11 divisions, 44 counties, etc., and 324 groups of districts. We refer to these as a valuable source of information ; and not with the view of incorporating the results here : they are too extensive for that purpose.

1850.—From the Census returns of the U.S. for this year the expectation of "coloured persons" was derived, and is shown in the following T. It is the first return of the kind ever obtained :

Completed age.	NEW ENGLAND.		MARYLAND.		LOUISIANA.	
	Coloured. Male.	Coloured. Female.	Slaves. Male.	Slaves. Female.	Coloured. Male.	Coloured. Female.
	Years.	Years.	Years.	Years.	Years.	Years.
0	39·75	42·20	38·47	39·47	28·89	34·09
10	42·92	45·75	45·30	45·00	35·92	40·69
20	35·87	39·92	39·28	39·62	30·48	35·36
30	29·77	34·96	34·41	34·62	26·87	30·86
40	22·83	28·75	27·50	29·00	23·25	25·85
50	18·27	22·11	21·16	23·17	19·13	21·07
60	13·89	17·31	14·32	16·71	14·75	15·27
70	9·42	13·06	8·76	10·57	11·33	10·93
80	6·44	7·87	5·40	6·80	5·38	6·16
90	3·69	4·61	3·80	4·00	3·43	3·34

The data for New England was obtained from the returns of 23,020 coloured residents ; for Maryland from returns of 90,368 slaves ; for Louisiana from returns of 244,786 slaves, and 17,537 free coloured, taken collectively. In every instance the duration of female life is greater than that of male life ; but the differences of the three sets of columns both for male and female life are very remarkable. In Louisiana the evils of slave life were but too apparent in both sexes.

We have also an opportunity of comparing the duration of male and female life in the U.S., from the Census returns of two of the States, taken this year at several ages, as shown in the following T.:

Ages.	Massachusetts Census, 1850.		Maryland Census, 1850.		England Census, 1841.	
	Males.	Females.	Males.	Females.	Males.	Females.
0	38·3	40·5	41·8	44·9	40·2	42·2
20	40·1	40·2	39·7	42·1	39·9	40·8
40	27·9	29·8	25·8	29·5	26·6	27·7
60	15·6	17·0	14·4	16·0	13·6	14·4
80	5·9	6·4	6·2	7·0	4·9	5·2

Here we see the female expec. greater than the male at each period named. In *Massachusetts* the difference is slight; in *Maryland* considerable at each period. The superiority of female life in Maryland as compared with either Massachusetts or Eng. is very marked. This may prob. be in some measure due to climate.

1851.—At the census taken this year the Commissioners took some pains to test the accuracy of the returns of the ages of females between that important period of female life 20–40. The mode employed was at once simple and effective. The number of girls at the census 1841 between the ages 10–15 was returned as 1,003,119; the number of young women returned as between 20 and 25 in 1851—who must have survived from the girls of the former period—was 1,030,456—showing an increase; while the number of young women of the age of 20–25 returned at the 1841 census was 973,696; yet at the census of 1851 the number of women of the age 30–35 was 768,711, showing a large decrease. It was admitted that the large immigration of the Irish into Gt. Brit. during the 10 years 1841–51 had caused a disturbing influence; but by comparing the above figures with those for *males* at the corresponding ages during the same period, the measure of the required correction could be estimated. The Commissioners say:

> **The conclusion appears inevitable that about 35,000 ladies, more or less, who have entered themselves in the second age 20–40, really belong to the third age 40–60. Millions of women have returned their ages correctly; thousands have allowed themselves to be called 20 or some age near it—which happens to be the age at which marriage is most commonly contracted in Eng.—either because they were quite unconscious of the silent lapse of time; or because their imaginations still lingered over the hours of that age; or because they chose, foolishly, to represent themselves younger than they really were, at the scandalous risk of bringing the statements of the whole of their countrywomen into discredit. With some trouble these mis-statements and errors of age can be partially corrected; and at future censuses, as the ages become better known, the errors, it may be sanguinely hoped, will not be repeated.**

After correcting the numbers of females at the middle ages to the extent above mentioned, it appeared that the females exceeded the males in and belonging to the country by 133,654 at the age of 20–40; as the males were 3,193,496, the females (corrected) 3,327,150. At the more advanced ages the excess in the number of females is proportionably still greater; and the number of females of the age of 20 and upwards exceeded the number of males by 405,342. In 1841 the excess of females at the age of 20 and upwards was 370,125; while in 1821 the excess was only 266,533.

From the data supplied by the census returns we have arranged the following

T. showing the proportion of Unmarried, Married, and Widowed Women in every 1000, *at each of the* 14 *periods of life, in E. and W. and in Scotland.*

Ages.	SPINSTERS.		WIVES.		WIDOWS.	
	E. and W.	Scotland.	E. and W.	Scotland.	E. and W.	Scotland.
15 to 20	947·55	978·73	25 16	20·94	0·29	0·34
20 ,, 25	687·29	748·40	307·75	246·78	4·97	4·82
25 ,, 30	397·61	465·72	583·84	511·63	18·55	22 65
30 ,, 35	248·55	316·29	711·45	634·36	40·00	49·35
35 ,, 40	178·89	248·78	758·43	673·03	62·67	78·19
40 ,, 45	144·66	223·49	755·81	649·70	99·53	126·82
45 ,, 50	125·69	208·84	739·20	624·00	135·11	167·15
50 ,, 55	118 84	206·82	688·07	559·60	193·09	233·59
55 ,, 60	113·57	204·70	638·89	499·48	247·54	295·82
60 ,, 65	116·31	210·78	536·22	403·70	347·48	385·53
65 ,, 70	109·84	204·51	448·39	336·34	441·77	459·15
70 ,, 75	112·36	210·63	336·63	250·30	551·02	539·07
75 ,, 80	108·98	208·43	243·23	175·94	647·79	615·64
80 and upwards	108·80	208·16	127·80	88·11	763·39	703·73
All Ages.	597·93	637·15	329·71	279·06	72·37	83·78

Mr. T. R. Edmonds, in a paper contributed to the *Assu. Mag.* [vol. ii. p. 57], *On the Law of Increase of the Pop. of England during the last* 100 *Years*, says:

> A considerable portion of the male pop. of Eng. is engaged in maritime and military service at home and abroad. The proper add. to be made on this account to the resident male pop. is not easily to be ascertained with exactitude. This defect is however of very little moment in an inquiry of the present nature, *as the law of increase of the male follows closely that of the female pop.*, for the determination of the latter of which there exist in Eng. sufficient materials. For these reasons the following remarks and obs. will be confined exclusively to the female pop. of Eng.

He then enters upon a detailed examination of the subject, in which we do not propose to follow him. The following T. gives in a condensed form many of the results arrived at:

T. showing in successive decennial periods from 1700 *to* 1850 *the average ann. rate p.c. of Births, Deaths, and Increase of the Total Female Pop. of Eng.*

Ten Years.	Births to 100 living.	Deaths to 100 living.	Excess of Births over Deaths.	Theoretical ann. rate of increase of pop.	Observed ann. rate of increase of pop.	Annual Marriages to 100 females living.
1701 to 1710	3·78	3·17	·61	...	..	...
1711 ,, 1720	3·63	3·29	·34	...	...	...
1721 ,, 1730	3·79	3·58	·21	...	...	...
1731 ,, 1740	3·85	3·58	·27	...	...	...
1741 ,, 1750	3·88	3·22	·66	·72	...	...
1751 ,, 1760	3·80	2·88	·92	·80	...	...
1761 ,, 1770	3·76	2·83	·93	·88	...	1·86
1771 ,, 1780	3·73	2·86	·87	·98	...	1·79
1781 ,, 1790	3·63	2·58	1·05	1·09	...	1·78
1791 ,, 1800	3·54	2·36	1·18	1·21	...	1·69
1801 ,, 1810	3·43	2·06	1·37	1·34	1·32	1·69
1811 ,, 1820	3·37	1·85	1·52	1·49	1·51	1·60
1821 ,, 1830	3·45	1·95	1·50	1·49	1·49	1·59
1831 ,, 1840	3·40	2·05	1·35	1·34	1·33	1·57
1841 ,, 1850	3·38	2·16	1·22	1·21	1·21	1·57

Herr Hopf, of the *Gotha Assu. Bank*, in a communication to the *Assu. Mag.* in 1852 [vol. iii. p. 255], speaks emphatically of his disapproval of lowering the rates for ins. females. He says in support of that position:

> The fact, indeed, is correct that females in general are subject to a less high mort. than males; *but not less correct and beyond doubt is the other fact, that such females as ins. themselves die quicker than males. This So. has made very unfavourable exp. in this respect.* (See 1855.)

1852.—Col. Sykes, F.R.S., read before the Brit. Asso. in 1852 a paper: *On the Census of the Islands of Bombay and Colaba, taken on the 1st May*, 1849, *by Capt. Baynes, Supt. of Police*, from which we gather the following details:—The entire pop. of the Islands of Bombay and Colaba, as numbered on the night of the 1st May, 1849, amounted to 566,119 persons; of these it was stated 354,090 were males, and only 212,029 females. The Hindoos amounted to 296,931, or very considerably more than one-half of the entire pop. The Mussulmans and Parsees each numbered about one-fifth of the pop.; while the entire number of Europeans, Indo-Europeans, native Christians and Jews, were not more than 20,000. The females were here only 59 p.c. of the males. Other then recent returns in India had shown similar results, but in no instance was the difference anything like so great as in the present, "not even in those districts where the prejudice of an enumeration of females may be regarded as strongest, or where the practice of female infanticide is most certainly known to prevail." But the author says, "The disproportion of the sexes cannot be attributable to female infanticide in Bombay, because amongst the pop. there are few of the Rajpoot castes, among which this atrocity is chiefly perpetrated." [INFANTICIDE.]

1853.—The *English Life* T. No. 2, so far as it relates to males, was pub. in the 12th Rep. of the Reg.-Gen. this year. The portion relating to female lives appeared in the 20th Rep., 1859, under which date we shall speak of its results more in detail. Dr. Farr, in his Letter in the Appendix of the 12th Rep., reviews the results of *Finlaison's Gov.* T., and also of *Exp.* T. No. 1, as to females, and contrasts them. He says:

> Notwithstanding the proofs of age, of survival, and of identity, these conflicting results show how difficult it is to construct a useful Life T. from a limited number of obs., for it is inconceivable that female lives should be so much longer or shorter than the lives of males as these returns indicate. The *after-lifetimes* [expec.], which differ so much from each other in the two conflicting T., as the bias, or the error, is in opposite directions, yield an average result agreeing with that of the National [*English*] T. . . The investigations seem to indicate that selection [against the office?] under the existing tests is more effective in the case of females than in the case of males; *and that it is not safe at present to ins. females at lower prems. than males.*

1854.—Mr. Charles Jellicoe read before the Inst. of Act. a paper: *On the Rates of Mort. prevailing amongst the Male and Female Lives assured in the Eagle Ins. Co. during the* 44 *Years ending* 31*st Dec.* 1851. We have already given a full abstract of this paper under

EAGLE INS. CO., MORT. EXP. OF; but the facts more particularly relating to female life were left to be noticed here.

The whole exp. under review embraced 7419 individuals, of whom 5493 were males, and 1926 were females, "selected with more or less care from amongst persons for the most part in the middle and upper ranks of life, and traced from year to year for a period, on the average, of about 8½ years from the time of their admission; the age of each being in the great majority of cases ascertained by certificate, or authenticated by formal declaration."

In consequence prob. of the paucity of numbers of females under obs. completed life T. were not given for the sexes separately; but the ann. mort. p.c. of males and females, and the prob. mean duration of life for each, are given in the following T.:

EAGLE LIFE—*Ann. Mort. p.c. in decennial groups, and comparisons with other Mort. T.*

Ages.	MALE LIVES.				FEMALE LIVES.			
	Eagle Exp.	*Carlisle* T.	*Exp.* T. No. 1.	*Northampton* T.	*Eagle* Exp.	*English* T. No. 1.	*Gov.* Annu.	*Exp.* T. No. 1.
20-29	1·03	·76	·77	1·56	1·31	·95	·88	1·68
30-39	1·19	1·05	·92	1·86	1·53	1·14	1·05	1·57
40-49	1·74	1·42	1·23	2·38	1·63	1·34	1·17	1·58
50-59	2·63	1·86	2·14	3·32	2·35	2·06	1·50	2·24
60-69	4·77	4·08	4·36	4·91	4·24	4·05	2·88	3·98
70-79	11·10	8·80	9·42	9·19	8·12	9·16	7·11	11·86
	3·75	3·00	3·14	3·88	3·19	3·11	2·43	3·81

EAGLE LIFE—*Prob. mean duration of Life at quinquennial periods, and comparisons with other T.*

Ages.	MALE LIVES.				FEMALE LIVES.			
	Eagle Exp.	*Carlisle* T.	*Exp.* No. 1.	*Northampton* T.	*Eagle* Exp.	*English* T. No. 1.	*Gov.* Annu.	*Exp.* T. No. 1.
20	37·9	41·5	41·5	33·4	37·6	40·81	44·0	35·9
25	35·4	37·9	38·0	30·9	35·4	37·52	40·8	34·4
30	31·6	34·3	34·4	28·3	32·3	34·25	37·6	31·7
35	28·2	31·0	30·9	25·7	29·1	30·99	34·3	29·1
40	25·0	27·6	27·3	23·1	26·8	27·72	31·1	26·4
45	21·7	24·5	23·7	20·5	23·8	24·43	27·8	23·2
50	18·7	21·1	20·2	18·0	20·7	21·07	24·4	20·1
55	15·4	17·6	16·9	15·6	17·6	17·63	20·8	16·8
60	12·8	14·3	13·8	13·2	14·8	14·40	17·3	13·8
65	10·2	11·8	11·0	10·9	11·8	11·52	14·0	10·6
70	7·6	9·2	8·5	8·6	9·8	9·03	11·0	7·9
75	5·7	7·0	6·5	6·5	7·0	6·92	8·5	5·4
80	3·9	5·5	4·8	4·8	5·8	5·20	6·5	4·8

From these T. it appears that although the rate of mort. amongst the female lives is high comparatively at the earlier ages, it is much the reverse towards the decline of life, and that these observations nearly balance each other; *so that the expec. in their case is throughout somewhat better than that shown to exist amongst the male portion of the insured.*

The close resemblance between the *Eagle* experience and that of *Experience* T. No. 1, as regards female lives, is remarkable; but the rates of mort. at different periods of life vary considerably. Mr. Jellicoe says:

> On the whole, the contrast which the data exhibit between the two sexes is consonant with what might be expected from their relative positions. The wear and tear of female life is unquestionably great from 20 to 40, whilst those who outlive this period have for the most part little to disturb the serenity of their declining years. The male sex, on the contrary, though prob. possessing more vigour in its prime, is exposed to the labours and anxieties of life to a much later period; and their effect when it approaches is in consequence the more sensibly felt. One inference is, at all events, fully supported by these data, viz. that the ins. of female life at less rates than that of male is scarcely justifiable.

1855.—The First Detailed Rep. of the Scottish Reg.-Gen. [pub. 1861] contained the regis. returns for 1855. Dr. Stark, the medical officer of the Department, in his rep. upon these, says:

> In casting our eye over the Scottish T. the first point of interest is the comparative mortality of the sexes at the different ages; and it is not a little interesting to observe that, at all ages, the proportion of male deaths to the pop. is greater than that of the female deaths. Thus while in every 10,000 living, 608 males under 5 years of age died during the year, only 566 females were cut off at

the same ages; from 5 to 10 years 82 males, but only 78 females; . . . from 10 to 15 years 48 males, but only 45 females; . . . and this in Scotland proved the most healthy period of life—that at which the mort. attained a minimum—that at which the chances of death were least. From 15 to 20, the period of puberty, 72 males, but only 58 females, died in every 10,000 of each sex: so that even at that age, which is commonly thought to be the most trying to the female, her life was better than that of the male—she was less liable to be cut off. The next period of life, 20 to 30, is that when, if at all, female mort. would naturally be expected to exceed that of the male. But no! In Scotland it appears that, notwithstanding all the superadded dangers of childbirth, female life is even then more valuable than male life: for while 91 males died out of every 10,000 males living at that age, the deaths among the females only amounted to 71 in every 10,000 living females. It is quite true that the Eng. T. show that from 15 to 35 years of age female life in Eng. is somewhat less valuable than male life, inasmuch as a 10 years' average shows that proportionally more females than males die at these ages. But it by no means follows that the same law prevails in Scotland; for though one year's results cannot be with certainty depended on as giving general averages, the difference between the mort. of the sexes is so striking that it may be surmised that future years will only estab. this interesting fact. In Scot. then from the period of birth up to 90 years of age, *the female mort. is lower at every period of life than the male;* and were the facts not too few to afford even an approximation to a gen. result after that age, the same greater value of female life would be shown to prevail to the termination of life. (See 1856.)

In this same year Mr. Geo. Scott, Act., contributed to the *Assu. Mag.* [vol. vi. p. 47], a letter—really a paper—*On certain means furnished by the Census of* 1851 *for extending the application of the principle of Assu. to the Social Condition;* wherein he showed how the various data more recently acquired regarding female lives might be made available for the purpose of extending the principle and practice of ins.—"to provide in a pecuniary sense for various necessities connected with the social state, which, from their very nature, may with singular propriety and advantage be brought under their operation." And he adds: "At all events, if the practice of assu. is to undergo any amplification, I believe it will be in this direction." [FEMALE PROVIDENT SO.]

We do not propose to enter into details regarding the subject of SICKNESS, and the differing degrees experienced by the two sexes. That will be dealt with under its proper head. But we may state that the result of Mr. Neison's inquiry into the exp. of the *Christian Mut. Prov. So.* for the 5 years ending 1855 revealed the fact that while the *sickness* among the females had exceeded the expec. of the T. by 17 p.c., that of the males had been less than the T. provided by 17¼ p.c. Mr. Neison advised that the rates of contribution by females for sickness ins. be increased *one-fifth*, which was done.

In 1855 the late Herr Rath G. Hopf contributed to the *Assu. Mag.* (vol. v. p. 324, and vol. vi. p. 1) a paper: *On the Results of the Operations of the Gotha Life Assu. Bank for the first* 25 *years of its existence, particularly with respect to the Mort. amongst the Lives Assu.* The period embraced extended from the year 1829 to 1852 inclusive. A T. is given showing the relative mort. of males and females during that time, as follows:

Ages.	MALES.			FEMALES.			Difference of the Mort. p.c.	
	Insured (Years of Life).	Died.	Mort. p.c.	Insured (Years of Life).	Died.	Mort. p.c.	Plus.	Minus.
26–30	9,139	70	0·77	721	12	1·66	0·89	...
31–35	23,497	208	0·88	1,285	23	1·79	0·91	...
36–40	35,782	342	0·98	1,823	35	1·92	0·94	...
41–45	40,043	424	1·06	2,054	19	0·92	...	0·14
46–50	35,615	515	1·45	2,170	33	1·52	0·07	...
51–55	27,284	515	1·89	2,279	34	1·49	...	0·40
56–60	18,840	525	2·79	2,086	74	3·55	0·76	...
61–65	10,857	459	4·23	1,508	43	2·19	...	2·04
66–70	4,802	302	6·29	797	37	4·64	...	1·65
71–75	1,690	161	9·53	256	23	8·98	...	0·55
76–80	373	45	12·06	48	6	12·50	0·44	...

The great excess of female over male mort., especially at the younger ages, is at once apparent. The writer says thereon:

In general, it has been hitherto supposed and proved by experience in mixed pop. that women have a longer duration of life than men—that therefore a less mort. is peculiar to them, and that *married* women are especially favoured in this respect. The prevailing majority of the females assured by the *Gotha* office, perhaps five-sixths, are married or widows, and only one-sixth not married. Nevertheless, their mort., in the years of the capability of conception under 40, exceeds double that of men. In the later period (*cessatio mensium*) of 40–50, the mort. of females is nearly equal to that of males; and it does not become lower until after this age, and not then in such a degree as to balance the above difference: the sum of the differences p.c. on the positive side is, in fact, three times greater than the sum of the differences p.c. on the negative side. Besides, it must be noticed that the *Gotha* office does not assu. women in the state of pregnancy, but delays the assu. for a favourable termination, and provided the next six weeks are passed without interruption of health; and that in general the greatest strictness and precaution are exercised in the admission of such assurances, as a greater mort. among assu. females was for a long time found to prevail.

It being observed that the ages at which the greatest mort. occurred were those at which the greatest number of females were admitted, the circumstance gave rise to the question "whether the office is not often grossly deceived by females—that the reason why it experiences a higher mort. in these years is because many of the females assu.

had the germ of an early death in them at the time of effecting the assu.?" If this were the case, the higher mort. would naturally occur soon after the completion of the ins. Accordingly an investigation was made, which led to the production of the following T.:

Mort. in the first quinquennium from the date of the pol. and after the first quinquennium—
FEMALES.

Ages.	In the first quinquennium.			After the first quinquennium.			Difference as compared with Males.			
							Plus.		Minus.	
	Insured.	Died.	Mort. p.c.	Insured.	Died.	Mort. p.c.	Absolute.	p.c.	Absolute.	p.c.
26–30	546	9	1·65	175	3	1·71	0·06	3·64	...	...
31–35	836	18	2·15	449	5	1·11	...	...	1·04	48·37
36–40	1012	17	1·68	811	18	2·22	0·54	32·14	...	...
41–45	955	11	1·15	1099	8	0·73	...	...	0·42	36·52
46–50	1004	21	2·09	1166	12	1·03	...	...	1·06	50·72
51–55	1122	22	1·96	1157	12	1·04	...	...	0·92	46·94
56-60	874	31	3·55	1212	43	3·55	...	...	...	...
61–65	365	7	1·92	1143	36	3·15	1·23	64·06	...	...
66–70	64	3	4·69	733	34	4·64	...	...	0·05	1·07
71–75	2	...	...	254	23	9·05	...	...	...	...
76–80	...	...	...	48	6	12·50	...	...	...	...

According to a corresponding T. for males (which we do not think it necessary to give, as the comparative results are shown in the last division of the preceding T.), the mort. of males was considerably less in the first five years from the commencement of the ins. than in the following period; in these therefore the benefit of selection was very apparent. As to the females, it is observed that great irregularities appear in the early quinquennial groups; but this might be in part accounted for by the smallness of the numbers under obs.; *on an average, however, their mort. was somewhat higher in the first 5 years than afterwards.* Great care had been taken in the admission of lives, as already stated; and no fraud had ever been detected. How then, Dr. Hopf asks, may this be explained? And he sets himself to a solution as follows:

> I think we must seek the principal cause of it in the circumstance that women, from the greater bashfulness peculiar to their sex, frequently do not communicate all their bodily infirmities and irregularities to their physicians, much less to others, and feel themselves therefore much less under obligation to give notice to the assu. office of what they consider their own secret respecting the condition of their body. They think even a question about it an indiscretion and a violation of their delicacy, which might entitle them by itself to avoid the truth in the answer. But the finer constitution of their nerves undoubtedly enables them to feel earlier, and before they are perceptible outwardly, those ailments and changes which may be going on in their system; and, however indistinct such a feeling may be in them, yet they are more impelled by it than men to take precautions against the threatening evil. Allusion is often made to a faculty of presaging peculiar to single persons, and attributed in a higher degree to women than to men. If such a faculty of presaging really exists, it may result from that natural cause; but it forms at the same time a sort of influence against which life assu. cos. must be on their guard. At all events, these offices cannot be sufficiently cautious in assuring women under 40 years of age, after the obs. mentioned above; and they are perfectly entitled to demand a higher prem. from women than from men for assurances at this age.

Herr Hopf compared the results with those deduced regarding females in the general pop. in England, France, Belgium, and Saxony, and found that the mort. under age 40 was lower by from 15 to 40 p.c. than that of the females insured in the *Gotha*; but beyond that age the mort. was on an average higher. He says:

> There is therefore no doubt that a greater proportion of females who assure their lives at the younger ages die earlier. The deviation is too significant and too constant to be considered accidental. We are not able to explain it by any other supposition than by the circumstance that women feel internal hidden infirmities and defects in a higher degree than men, and have a presentiment of approaching danger in consequence of them, which impels them to assure their lives; or that they understand better and more skilfully than men how to hide the true state of their health, and to deceive by it even their medical men. This is facilitated by the proceeding of many physicians, who think themselves obliged to act with greater delicacy and respect in the medical examination of females. That influence, however, is felt only for a certain series of years; at a higher age the assured females are subjected to the common law of mort., which is more favourable at this period to them than to males.

He then enters upon a further series of inquiries, from which he deduces these results: 1. That in *Germany* (*Gotha* Office, *Prussian Widows Fund*, and Kingdom of Saxony) females at the ages below 40 years have a greater, and at the ages above 40 a less, mort. than males. 2. That in *England* the mort. of the female sex is equal to that of the male at the ages under 40 years, but is diminished in proportion beyond that limit. 3. That in *France* women have a higher, and 4—In *Belgium* a lower, mort. than men at all ages. It appears from this that *France* only (according to Demonferrand's T.) forms an exception to the law that the female sex exhibits a less mort at the higher ages than the male.

1856.—The Reg.-Gen. in his 16th Ann. Rep. gave some T. illustrative of the difference in the rates of mort. between males and females at several periods of life. It was found that the greater excess of mort. occurred in boys, in the first 5 years of age, when, out of 1000 living, 72¾ (72·75) die ann., while out of the same number of girls, only 60½

(60·50) die. In the next age of life, viz. from 5 to 10, the proportion of deaths was nearly equal, being about 9 p. 1000. Between 10 and 15 the mort. was rather the largest with the girls. The mort. of both sexes then increased; and the women up to the age of 35 died in rather greater proportions than men. After the age of 45 the mort. of the men was considerably higher than the mort. of the women.

Dr. Stark returned to the subject of female life in the 2nd Detailed Rep. of the Scot. Reg.-Gen. returns for 1856. He says:

> The powerful influence of sex in modifying the mort., which we pointed out in the Extended Rep. for 1855, was equally observable in 1856; for while 208 males died during the year in every 10,000 of the male pop., only 186 females died in a like number of the female pop.
>
> This lesser waste of female life was observed in all the three great groups into which the inhabitants of Scotland have been divided. Thus, in every 10,000 persons of each sex living in each of the different groups, it was found that in the Insular Districts 139 males, but only 126 females, died during the year. In the Mainland Rural Districts the proportions were 173 males, but only 158 females; while in the Town Districts, 277 males, but only 238 females died in every 10,000 of each sex respectively.

The annexed table shows clearly the per-centage of deaths to pop. for each sex in the several districts; and also in the whole of Scotland, 1856:

Districts.	Males.	Females.	Both Sexes.
Insular	1·390	1·268	1·324
Mainland and Rural	1·734	1·584	1·656
Town	2·778	2·385	2·568
Scotland generally...	2·084	1·861	1·967

This greater value of female life appeared to extend to the females at every period of life, from birth to old age.

Mr. S. M. Drach, in a letter to the *Statistical Journ.* vol. xix. p. 182, contributes a T. which he had constructed from data appearing in the 14th and 15th Ann. Rep. of the Reg.-Gen., showing the p.c. of mort. in each sex to the numbers living at that age in various years. Thus, in the year 1838, to 100,000 males then living, aged from 25 to 35, there died 1064; to the like number of females there died 1046. "It occurred to me," he says, "that if the quotient of these two numbers, . . . 1·017, were tabulated, it would nearly represent the law of mort. between the two sexes, independently of epidemics and other aggravating causes. Thus, if 10 men and 9 women, 20 men and 18 women, 50 men and 45 women, etc., died per 10,000 of the then existing pop., the proportion of 10 to 9 would still remain unaltered." These quotients are exhibited in his T., which shows how very small the variation from this law during the period 1838-52 (half a generation) had been. He adds:

> The T. indicates that man is relatively weaker than woman at 0-5 years of age (2½ mean); this maximum is again apparent at 45-55 (*i.e.* 50); they are nearly equal at 5-10 (7½), 35-45 (40); and at 25-35 (30), the principal period of reproduction, females are less able to resist death in the proportion of 95 to 100. The general regularity of this *minimum at this age* is a most striking feature of the T.; and if the birth-regis. would indicate the age of the mother, and the rank of the child (as 1st, 2nd, 5th, etc.), we should have a still better elucidation of this fact.

1857.—Mr. F. G. P. Neison, in his *Contributions to V. Statistics* (3rd ed.), found that the difference between the equation [Equation of Life] for age 10 in the male and female life for the whole pop. of *Glasgow* was 3·125 years; while in the general pop. of E. and W. it was a little above one year. But it also appeared from his inquiry "that the higher the absolute value of life in any class of results, the less distinction will there be found between male and female life." This he illustrates as follows, from T. which he had constructed: Friendly Sos. in E. and W., equation at age 10, females 56·749, males 56·408, difference ·341 of a year. Total pop. of E. and W., females 53·554, males 52·308, difference 1·246; whole pop. of Glasgow, females 41·346, males 38·221, difference 3·125. He adds:

> If comparisons were made between the sexes in the intermediate classes of results, a development of the same feature would be seen. As has already been stated, where the duration of life is reduced below its average standard by the prevalence of unhealthy occupations, the influence will be more strongly felt in the male than in the female sex.

Under Friendly Sos., Mort. T. for, and also under Sickness, we shall have occasion to notice further investigations by Mr. Neison regarding female life.

1858.—Dr. Stark, in the 4th Detailed Rep. of the Scot. Reg.-Gen., reviewing the returns for 1855, more especially in regard to the mort. of infancy, says:

> Now this great disparity in the mort. of the sexes at that early period of life can be referred to nothing but an impressed law of nature, due to sex, and to no other cause. In after life we might imagine it could be accounted for by the greater exposure of the male, to his more unhealthy occupation, to the greater anxiety and cares to which he is subjected, to his more frequently injuring his health by the abuse of tobacco or of spirituous liquors; but all this will not account for the greater mort. of the male while a nursing infant, nor will it serve in the smallest degree to account for the fact that even during his intra-uterine life he is more liable to death than the female—the male still-births greatly exceeding the female, viz. in the ratio of 13 to 10. When therefore it is observed that it seems to be the natural law that males die in a higher rate than females, *we must be especially careful not to ascribe to unhealthy occupations or other causes that which is due to sex alone.*

Mr. J. J. Fox, Surgeon, Stoke Newington, read before the Statistical So. of Lond. a paper: *On the V. Statistics of the Society of Friends*, wherein is given a Mort. T. based upon the number living in 1847, and the deaths during the ten years 1842-52. The expec. for the sexes will be found in the first T. on the next page.

The expec. of life among the "Friends" is seen to be considerably greater than among the general pop., especially at the younger ages. With the males this difference continues up to age 80; with the females the difference becomes rapidly less, and disappears altogether after 75. The females in fact do not show by any means so much improvement on the general pop. as the males. But there is to be observed this great peculiarity, *that at nearly all ages among the Society of Friends the male has a greater expec. than the female life.* The difference in favour of the male commences soon after birth, and continues until near 40; the female then gains the ascendency, and retains it until over 70; after which age the advantage of expec. alternates between the sexes. Table:

Age.	Males.	Females.
0	45·34	45·72
5	53·83	52·08
10	50·53	49·10
15	46·38	45·25
20	43·05	42·02
25	39·90	38·89
30	36·55	35·71
35	32·95	32·64
40	29·22	29·31
45	25·46	25·86
50	21·61	22·32
55	17·77	18·82
60	14·37	15·49
65	11·65	12·42
70	9·38	9·53
75	7·40	6·93
80	5·56	4·97
85	3·89	3·69
90	2·64	2·80
95	1·68	1·72

The *Yorkshire* F. and L. had from its commencement in 1824 down to this date ins. female lives at considerably lower rates than males; but from this time it has charged the same prems. for females as for males.

1859.—In the 20th Rep. of Reg.-Gen. pub. this year, appeared that portion of the *English* Mort. T. No. 2, relating to females. In our hist. of that T. we have included these results along with those for males (which had been pub. in the 12th Rep. 1853) in order that the differences in the mort. of the sexes as shown by that T. might be readily contrasted. We now present the following summary of results—all money values being calculated at 3 p.c. interest:

Age (or Birthday).	To 1000 Children Born Alive, the number of Females Living on each Birthday.	Females Dying in the Year following each Birthday.	After life-time (or Expec. of Life).	To insure £100 on the Life of a Female. (Net Rates.)						Present Value of a Life Annuity of £1.			Life Annuity which £100 will Purchase.		
				Uniform Ann. Premiums.			Premium for a Single Year.			(First Payment at the beginning of each Year.)					
			In Years.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
0	487	64	42	2	2	3	12	15	7	19	17	11	5	0	6
1	423	26	47	1	11	0	5	17	7	22	8	3	4	9	3
2	398	15	49	1	6	11	3	11	4	23	9	6	4	5	2
3	383	10	50	1	5	0	2	10	0	24	0	8	4	3	3
4	373	7	51	1	3	11	1	17	1	24	7	0	4	2	2
5	366	5	51	1	3	4	1	7	4	24	10	4	4	1	7
6	361	4	50	1	3	2	1	0	2	24	11	5	4	1	5
7	357	3	50	1	3	3	0	16	5	24	10	8	4	1	6
8	354	2	49	1	3	7	0	13	7	24	8	11	4	1	10
9	352	2	49	1	4	0	0	12	11	24	6	4	4	2	3
10	349	2	48	1	4	6	0	9	11	24	3	7	4	2	9
11	347	2	47	1	5	1	0	9	8	23	19	11	4	3	4
12	346	2	46	1	5	9	0	9	7	23	16	1	4	4	0
13	344	2	46	1	6	6	0	10	0	23	12	1	4	4	9
14	342	2	45	1	7	2	0	11	6	23	8	1	4	5	5
15	340	2	44	1	7	11	0	11	4	23	4	3	4	6	2
16	338	3	43	1	8	8	0	14	6	23	0	4	4	6	11
17	336	3	43	1	9	4	0	15	5	22	16	11	4	7	7
18	333	3	42	1	9	11	0	15	9	22	13	8	4	8	2
19	330	3	41	1	10	7	0	16	0	22	10	3	4	8	10
20	328	3	41	1	11	3	0	16	3	22	6	10	4	9	6
21	325	3	40	1	12	0	0	16	7	22	3	5	4	10	3
22	322	3	39	1	12	8	0	16	10	21	19	10	4	10	11
23	319	3	39	1	13	5	0	17	2	21	16	3	4	11	8
24	317	3	38	1	14	3	0	17	6	21	12	7	4	12	6
25	314	3	37	1	15	0	0	17	10	21	8	9	4	13	3
26	311	3	37	1	15	10	0	18	2	21	4	11	4	14	2
27	308	3	36	1	16	9	0	18	6	21	1	1	4	15	0
28	305	3	35	1	17	8	0	18	11	20	17	1	4	15	11
29	302	3	35	1	18	7	0	19	3	20	13	0	4	16	10
30	299	3	34	1	19	7	0	19	8	20	8	10	4	17	10
31	296	3	33	2	0	7	1	0	1	20	4	7	4	18	10
32	293	3	33	2	1	8	1	0	6	20	0	3	4	19	11
33	290	3	32	2	2	10	1	0	11	19	15	10	5	1	1
34	287	3	31	2	4	0	1	1	4	19	11	4	5	2	3
35	284	3	31	2	5	2	1	1	9	19	6	9	5	3	5
36	280	3	30	2	6	5	1	2	3	19	2	0	5	4	8
37	277	3	29	2	7	9	1	2	9	18	17	3	5	6	0
38	274	3	29	2	9	2	1	3	3	18	12	3	5	7	5

Age (or Birthday).	To 1000 Children Born Alive, the number of Females living on each Birthday.	Females Dying in the Year following each Birthday.	After life-time (or Expec. of Life).	To insure £100 on the Life of a Female. (Net Rates.)						Present Value of a Life Annuity of £1.			Life Annuity which £100 will Purchase.		
			In Years.	Uniform Ann. Premiums.			Premium for a Single Year.			(First Payment at the beginning of each Year.)					
				£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
39	271	3	28	2	10	8	1	3	9	18	7	3	5	8	11
40	267	3	28	2	12	3	1	4	3	18	2	1	5	10	6
41	264	3	27	2	13	10	1	4	9	17	16	10	5	12	1
42	261	3	26	2	15	7	1	5	4	17	11	5	5	13	10
43	257	3	26	2	17	5	1	5	10	17	5	10	5	15	8
44	254	3	25	2	19	4	1	6	5	17	0	2	5	17	7
45	250	3	24	3	1	5	1	7	0	16	14	3	5	19	8
46	247	4	24	3	3	7	1	7	7	16	8	3	6	1	10
47	243	4	23	3	5	11	1	8	3	16	2	1	6	4	2
48	240	4	22	3	8	5	1	8	10	15	15	9	6	6	8
49	236	4	22	3	11	1	1	9	6	15	9	3	6	9	4
50	233	4	21	3	14	0	1	10	11	15	2	6	6	12	3
51	229	4	20	3	17	0	1	12	10	14	15	8	6	15	3
52	225	4	20	4	0	3	1	14	10	14	8	10	6	18	6
53	221	4	19	4	3	7	1	16	10	14	2	0	7	1	10
54	217	4	18	4	7	2	1	18	11	13	15	1	7	5	5
55	212	4	18	4	11	0	2	1	0	13	8	1	7	9	3
56	208	5	17	4	15	0	2	3	4	13	1	0	7	13	3
57	203	5	16	4	19	3	2	5	10	12	13	11	7	17	6
58	199	5	16	5	3	10	2	8	7	12	6	9	8	2	1
59	194	5	15	5	8	9	2	11	8	11	19	7	8	7	0
60	188	5	14	5	13	11	2	15	0	11	12	4	8	12	2
61	183	6	14	5	19	5	2	18	9	11	5	1	8	17	9
62	178	6	13	6	5	5	3	2	10	10	17	10	9	3	8
63	172	6	13	6	11	8	3	7	5	10	10	7	9	9	11
64	166	6	12	6	18	5	3	12	6	10	3	4	9	16	8
65	160	6	12	7	5	8	3	18	2	9	16	2	10	3	11
66	153	7	11	7	13	4	4	4	4	9	9	1	10	11	7
67	147	7	11	8	1	5	4	11	2	9	2	1	10	19	8
68	140	7	10	8	10	1	4	18	7	8	15	2	11	8	5
69	133	7	10	8	19	4	5	6	8	8	8	4	11	17	7
70	125	7	9	9	9	2	5	15	6	8	1	8	12	7	5
71	118	8	9	9	19	6	6	5	1	7	15	2	12	17	9
72	110	8	8	10	10	7	6	15	6	7	8	10	13	8	10
73	103	8	8	11	2	2	7	6	8	7	2	8	14	0	5
74	95	8	7	11	14	6	7	18	8	6	16	7	14	12	9
75	87	8	7	12	7	6	8	11	6	6	10	10	15	5	9
76	79	8	7	13	1	3	9	5	3	6	5	2	15	19	6
77	72	7	6	13	15	9	9	19	10	5	19	9	16	14	0
78	64	7	6	14	10	11	10	15	5	5	14	7	17	9	2
79	57	7	6	15	6	11	11	11	11	5	9	7	18	5	2
80	50	6	5	16	3	7	12	9	4	5	4	9	19	1	10
81	44	6	5	17	1	2	13	7	8	5	0	2	19	19	5
82	38	6	5	17	19	6	14	7	0	4	15	9	20	17	9
83	32	5	5	18	18	8	15	7	3	4	11	7	21	16	11
84	27	5	4	19	18	8	16	8	5	4	7	7	22	16	11
85	23	4	4	20	19	5	17	10	7	4	3	9	23	17	8
86	19	4	4	22	1	1	18	13	8	4	0	1	24	19	4
87	15	3	4	23	3	6	19	17	8	3	16	8	26	1	9
88	12	3	3	24	6	8	21	2	6	3	13	5	27	5	0
89	9	2	3	25	10	9	22	8	4	3	10	4	28	9	0
90	7	2	3	26	15	7	23	15	0	3	7	4	29	13	10
91	5	1	3		...			...		3	4	7	30	19	5
92	4	1	3		...			...		3	1	11	32	5	9
93	3	1	3		...			...		2	19	5	33	12	10
94	2	1	3		...			...		2	17	1	35	0	9
95	1	0	2		...			...		2	14	10	36	9	3
96	1	...	2		...			...		2	12	9	37	18	5
97	1	...	2		..			...		2	10	9	39	8	3
98	0	...	2		...			...		2	8	10	40	18	8
99	...	...	2		..			..		2	7	0	42	10	11
100	...	...	2		...			...		2	5	4	44	2	8

In the preface to Mr. Jardine Henry's *Gov. Annu.* T. pub. this year, the author draws attention to "six distinct series of obs. of the most authentic character," viz. 1. *Deparcieux's* monks and nuns. 2. The *Montpellier* T. 3. T. for *Sweden* and *Finland*. 4. *Finlaison's* Gov. T. 5. *English* Life T. No. 1. 6. *Demonferrand's* T. for France. He says:

On comparing the six T. with each other as regards the difference of male and female life, it is obvious that the latter is longer in duration, according to all the T. except that of Demonferrand. This latter was compiled only from deaths – a mode of forming T. that is open to serious objections. As regards general results, the *male* T. that approximates nearest to the average is the British Gov. aggregate. The *female* T. nearest the average is that of Demonferrand; and very near to the latter are Deparcieux's and the Swedish T. [he does not say which of these latter]. The three highest *male* T. are the English Life T. No. 1, Demonferrand, and the Brit. Gov. aggregate. The three highest *female* T. are the Brit. Gov. aggregate, the English Life T. No. 1, and Demonferrand. The English Life T. No. 1, and the Montpellier T., both for females, bear a close resemblance to each other from the age of 10 inclusive and upwards. The deaths in the Montpellier T. occurred before 1792, and the coincidence may justly be considered as remarkable. In comparing the males of these two T. for the same ages, we find that the English Life T. gives an average duration of about 2 years more than the Montpellier T.

The T. for *males* are much closer to each other than the T. for *females*. The greatest difference between the average for males and any *male* T. being (on summation from 20 to 29 inclusive) 1·06 years, in which the average is *plus*; and for females 1·36 years, in which the average is *minus*. The extreme difference between males and females for the given ages is 3·87 years; being the difference between Deparcieux's monks and the Brit. Gov. females.

In an art. on *Eurasian Mort. in India*, contributed to the *Calcutta Review* by Mr. P. M. Tait in 1859, is given the result of obs. on 825 females, over a period of 20 years, ending 1857, giving 5675 years of risk. From five-sixths to three-fourths of the females were Eurusians. The annexed T. shows how the mort. came out in quinquennial periods:

Ages.	F. Nominees & Incumbents.	Females E. & W.—Neison.
16–20	14·77	7·78
21–25	23·86	8·98
26–30	22·50	9·96
31–35	23·40	10·89

Thus the mort. was double, and in some cases nearly three times that in Eng. The causes assigned were—(1) marriage at 14 or 15; (2) numerous families at 19 and 20; (3) precocious fecundity.

1860.—Mr. A. G. Finlaison presented to the Gov. his *Report on the Mort. of the Gov. Life Annuitants*, wherein he extended the obs. of the late Mr. John Finlaison down mostly to 1856. The general results of these T. will be reviewed under GOV. ANNUITANTS, MORT. T. FOR; but we here propose to note any special developments regarding female life. The total males under obs. was 11,829; total females 16,538. The two groups of combined obs. give the annexed as the expec. of life for each sex. Mr. Finlaison says:

The annexed T. represents in nearly all respects the same features as those which characterized the T. framed 35 years previously, in 1823 [pub. in 1829]. The mort. of the males throughout life, after the age of infancy, is heavier than that of the females. As was the case in the old T., it also shows a temporary increase at the age of 23, but in the new T. the mort. at that age is not so heavy as in the old obs.: for the per-centage [mort. p.c.] is not heavier than the per-centage at 43 years of age, whereas in the old obs. it was as heavy as that taking place at 48. In the new *female* T. the mort. p.c. at the ages 8 and 13 is the same, while in the old T. the mort. diminishes slightly from the first mentioned age of 8, where it is ·572, to the last stated period of life, where the per-centage is ·477. But in the new T. for females, the mort. p.c. between the ages 8 and 13 runs as follows, . . . showing that the minimum mort. occurs at the ages of 10 and 11 years; while in the old T. the mort. also came really to a minimum at the age of 11 [*note*—which therefore would seem to be the best age at which to select a life of the female sex for insertion in a lease]. In the new *female* T. the mort. is at an absolute minimum at the age of 10; with the very slightest shade of increase at the age of 11. But in the *natural* fraction of this T., as distinguished by the fraction produced by the methods already described, the minimum is positively at the age of 11, as a reference to the full T. in the Appendix [see GOV. LIFE ANNU., MORT. T. FOR, 1860] will show. By a similar reference it will also be seen that the minimum mort. takes place at the same age of 11 with the male sex. In any selection of a life at its highest vitality, it therefore is tolerably clear that a child of 10 or 11 years old should be chosen.

Age.	Males.	Females.
5	48·88	53·28
10	45·57	50·07
15	41·85	46·49
20	38·74	43·27
25	36·25	40·02
30	33·39	36·65
35	30·25	33·30
40	27·12	29·91
45	23·86	26·45
50	20·53	22·99
55	17·41	19·56
60	14·41	16·17
65	11·54	12·96
70	9·08	10·14
75	7·00	7·70
80	5·22	5·69
85	3·93	4·17
90	2·78	2·94
95	1·51	1·57

After this explanation, he says:

An exaggeration of the vitality of the female sex has been attributed to Mr. [John] Finlaison. It should be remarked, however, that Mr. Finlaison, in maintaining the superiority of vital power of the female sex, *never went further, virtually, than to affirm that, so far as he had observed annuitant life, that superiority existed to the extent laid down in his Life T.*

The recent investigations no doubt appear to show that the disparity between the mean duration of male and female life laid down by Mr. Finlaison from his observation requires some degree of modification. Viewed through the medium of the "expec.," the disparity of the mean duration ascribed to the females in youth and middle age would seem to require material reduction. This result tends chiefly to show the necessity of a range, wider in point of time rather than in numbers, in order to get the true proportion of deaths.

He explains this by stating that in 1823, prob. not 16 p.c. of the sinking fund *female* life annuitants inrolled had died off, "if we may judge from the numbers given as obs. up to 1 Jan. 1826, in the rep. of 1829." But of the 10,595 sinking fund female life annuitants observed up to July, 1856, 60 p.c. had gone off by death in a lapse of 48 years. He adds; "But although any statement of the difference of the mort. between the sexes *seems rather large when viewed through the intervention of the expec.*, the comparison is reduced to a better outline when contemplated through the more practical medium of the value of the annu." The following abstract T. of 4 p.c. annu. values is then given in proof:

Age.	Old Observations—4 p. c.			New Observations—4 p.c.			Age.
	Males.	Females.	Difference in Year's Purchase.	Males.	Females.	Difference in Year's Purchase.	
3	19·26	19·95	·69	19·29	19·89	·60	3
8	19·03	19·89	·86	18·97	19·75	·78	8
13	18·34	19·32	·98	18·29	19·24	·95	13
18	17·53	18·78	1·25	17·59	18·76	1·17	18
23	17·07	18·33	1·26	17·20	18·30	1·10	23
28	16·67	17·79	1·12	16·78	17·70	·92	28
33	16·05	17·15	1·10	16·08	17·00	·92	33
38	15·24	16·46	1·22	15·26	16·21	·95	38
43	14·26	15·65	1·39	14·29	15·25	·96	43
48	13·01	14·63	1·62	13·08	14·13	1·05	48
53	11·58	13·37	1·79	11·75	12·83	1·08	53
58	10·26	11·89	1·63	10·35	11·35	1·00	58
63	8·83	10·26	1·43	8·80	9·68	·88	63
68	7·33	8·55	1·22	7·23	8·00	·77	68
73	5·97	6·88	·91	5·82	6·39	·57	73
78	4·45	5·41	·96	4·46	4·88	·42	78
83	2·93	4·29	1·36	3·36	3·62	·26	83
88	1·65	2·77	1·12	2·44	2·59	·15	88
93	·93	1·35	·42	1·43	1·54	·11	93
98	...	·42	...	·31	·31	...	98

Mr. Finlaison continues:

From this comparison it will be seen that, for practical purposes, the high vitality returned for the female sex by the obs. of 1823 is contradicted in no very violent degree by the further and more extended obs. of 1860. The ratios of the values of the life annu. to the one sex and to the other are, however, more steady and constant in the new obs. than in the old. This, too, is prob. the result of an experience more extended in point of time. Whether the variance of the new and old obs. as against the female purchaser, which at the age of 53 amounts to nearly three-quarters of a year's purchase by the T. now in use, and sinks again at the age of 13 to as little as $\frac{3}{100}$th parts of a year's purchase, or about 4 days' income, is substantial enough to suggest the necessity of a revision of the T., will be better determined after a direct comparison of the value of the annu. in respect of each sex separately by the old T. at present in use, and T. deduced from the recent obs. . . .

The comparisons are set out; it is not necessary for us to follow them; the general results appear in what is next to be given:

The variance between the old T. and the new is very trifling where the interests of the male sex are in question. So much so as to be altogether unworthy of serious attention of either the vendors or purchasers. Where the female sex is concerned, however, the differences are of more importance. *The new obs. has a tendency to show that under the present system the vitality of the female life annuitant is somewhat too highly rated;* and that although such modifications in the charges as might be made on this age would not be of very great moment in detail, yet that a change from the present rates to a tariff modified by the further experience obtained in the last 35 years would in practice prob. affect the annu. dealings of the National Debt Office to some extent. Taken in the gross, the sum which the more extensive obs. shows to be unnecessary to secure the Gov. against loss is prob. too large to be overlooked, and possibly is sufficiently substantial to give by its removal add. inducement to the individual annuitant for further investment of capital or savings. But this is only a conclusion arrived at by the present investigation. It is impossible to predict with certainty that a further obs. of the female annuitants, taken some 30 years hence, or at the close of a new generation, may not restore the relative superiority of the female sex in point of vitality to the proportions observed in 1822. . . .

It is almost certain that any material improvement in the human physical constitution will be first observed in the diminution of the infantile and the female mort. The greater perils of life to which the male is exposed in the ordinary course of a civilized existence may neutralize his portion of the general improvement for a long time to come; but with the female it is different, from the nature of her social position. Under all these circumstances perhaps the time has now come for considering whether it may not be proper to submit the whole subject to the Lords of the Treasury, in order that their Lordships may determine whether the T. now acted upon for the grant of annu. should be in any degree modified.

Mr. A. G. Finlaison assumed it as a principle after careful obs. that above the age of 98 there is no distinction to be found between the vitality proper to the male sex and the vitality proper to the female sex. He uses the following argument in support of the greater mort. of males:

The sexes are not created in equal numbers. For every 20 females there are produced 21 males. But no fact is more thoroughly estab. than that, whenever the pop. is counted, the females are present in considerably greater number. Making every allowance for the temporary absence of a part of the male pop., such a result *could not take place unless the stronger sex were subjected to a higher rate of mort., and died off much faster than the females.* Were this not so, and did not the males by their more rapid departure from the world subsequently compensate for their appearance in greater numbers in the first instance, it is evident that they would more and more preponderate at every successive enumeration.

The more general aspects arising out of the rep. under immediate notice will be given under Gov. Life Annuitants, Mort. T. for.

Dr. Farr, reviewing the causes of death in E. and W. in 1860, says: "The difference in the liability of the two sexes to disease is due in some cases to structure, in others to occupation, in others to dress, in others to passion, and in others to causes which are at present inappreciable." We propose to give an abstract of his illustrations.

The zymotic deaths are in the aggregate nearly equal in males and females: diphtheria, whooping-cough, and metria destroying most females; smallpox, croup, carbuncle, diarrhœa, ague, and rheumatism most males. Metria is the consequence of child-bearing; and males are prob. more exposed than females to the poisons of ague and rheumatism; but it is difficult to assign any reason for the fact that while 3769 boys under 5 years of age died of whooping-cough, 4436 girls died of the same disease at the same age. Syphilis is equally fatal to males (543) and to females (524). The deaths of 3 males from hydrophobia, and 4 from glanders, may be traced to the greater exposure of males to their causes. Of gout 212 men and 56 women died.

Delirium tremens killed 407 men, and 50 women. Intemperance 212 men, 106 women; and this is quite in conformity with what is shown above on the comparative temperance of English women. Women have a greater disposition to dropsy than men. And while 2100 men died of cancer, 4727 women died of this disease. The frequent seat of the disease in the uterus and in the breasts explains the difference. Women were also more subject to consumption than men.

The excess of the deaths of young girls of the age of 15-20 is 1142 annually. These sad deaths may be partly the result of organization: but many of them are also partly referable to tight lacing, to thin shoes, to close rooms, and to the want of exercise in the open air. Young women of 20-40 are also exposed to the same causes, and to others incidental to their condition.

Scrofula, tabes mesenterica, hydrocephalus, cephalitis, convulsions, and epilepsy, or the acute diseases of the brain generally, are the most fatal to males; but chorea (St. Vitus's dance) killed 26 males, 40 females.

Aneurism was fatal to 265 males, 103 females. The large arteries, weakened by deposits, are sometimes ruptured by violent exertions, which men make more frequently than women. Asthma, emphysema—strictly from enlarged or ruptured air-cells—is also more fatal to males than to females. The greater frequency of pneumonia and bronchitis in male than in female children under 5 years of age is one of the causes of the excess in the mort. of boys; but it cannot at present be explained by differences of structure; neither can the excess in the deaths of males by pneumonia at more advanced ages. The men are, however, more exposed than women to cold weather.

The diseases of the digestive organs, and notably perionitis and ascites, are the most fatal to women. The perionitis of the registers is prob. in many cases the result of child-bearing, under which it should properly be returned. The diseases of the kidney and bladder, including stone, are more than twice as fatal to males as to females. This is partly due to the differences of the urethra in the sexes; but the excess of the deaths of men by diabetes shows that this explanation alone is insufficient. 154 males and 25 females died of stone in the bladder; 346 males and 190 females of diabetes. The diseases of the organs of generation were fatal to 40 men and to 1078 women, including in the latter case 244 deaths by ovarian dropsy. Phlegmon is most common to males; ulcer to females.

More boys than girls die of malformation; the evolution of the males is more elaborate, and is more frequently left incomplete, than in the female. Spina bifida—from the unclosed fissure in the back of the spine—is most frequent in females. The failure in the development of strength and nutritive power is more frequent in males—of whom the deaths of 14,170 were ascribed to atrophy and debility—than in females, 12,756.

Men are exposed to greater dangers in their daily life than women: 10,667 males and 4109 females died violent deaths. Of the deaths by accidental fractures and contusions, 4552 males and 865 females died; of those by accidental drownings 1908 males and 356 females died. Burns and scalds are more fatal to females in the aggregate; but in the first years of infancy, when the dresses of both sexes are equally combustible, the boys are more frequently burnt and scalded than the girls, who are cautious. From the age of 5 to 10 twice as many girls as boys are burnt; from 10 to 15 the number and the difference diminish; at 15 and up to 45 the exposure of men to fire in coal-mines and other works is greater than of women to burning; after 55 many women are burnt to death. By lightning and poison more men than women are killed. As to suicides, there were 375 women and 990 men.

The Supplement to the 25th Rep. of the Reg.-Gen. contained the following T., showing the average ann. number of deaths of males and females by different causes at certain ages to 1,000,000 deaths of males and 1,000,000 deaths of females from all causes in England in the ten years 1851–60:

Diseases.	Proportional Numbers to 1,000,000 Deaths from all Causes.											
	Ages—Males.											
	0—5	5—10	10—15	15—20	20—25	25—35	35—45	45—55	55—65	65—75	75—85	85 & upw.
All Causes	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Smallpox	14,449	31,800	14,354	15,742	19,674	12,473	5,505	2,924	1,090	408	128	98
Measles	39,307	30,732	6,539	1,633	862	493	276	120	31	16	7	—
Scarlatina	59,511	233,318	94,426	21,767	7,566	4,073	2,417	1,111	483	150	54	—
Diphtheria	5,948	26,746	17,411	5,846	2,381	1,147	925	499	365	220	135	98
Whooping-cough	44,813	15,646	1,316	163	82	77	7	14	12	21	—	—
Typhus	19,337	110,104	140,647	128,333	96,265	70,266	51,960	43,373	33,801	23,923	11,864	4,744
Cholera, Diarrhœa, & Dysentery	77,663	27,423	22,655	16,917	20,413	25,170	25,577	27,402	30,408	34,138	33,595	24,800
Other Zymotic Diseases	48,489	54,370	36,584	30,487	23,451	33,794	41,525	39,767	35,145	29,715	22,632	14,845
Cancer	292	1,131	1,680	2,417	3,065	6,537	13,978	23,507	30,172	23,016	11,823	5,997
Scrofula and Tabes Mesenterica	28,524	36,684	51,283	34,014	24,011	16,731	9,205	7,009	4,626	2,834	834	295
Phthisis	18,345	61,718	156,399	358,432	459,228	421,391	320,869	213,310	108,018	36,569	6,659	1,770
Hydrocephalus...	40,237	46,516	21,582	4,605	1,382	739	567	387	260	123	81	—
Diseases of the Brain	168,010	71,370	74,039	59,390	49,788	66,655	94,544	110,803	132,784	150,484	116,801	63,806
Diseases of the Heart and Dropsy	5,875	28,174	49,460	48,139	39,253	53,720	80,312	105,720	133,837	133,378	84,603	34,238
Diseases of the Lungs	155,947	68,758	45,209	50,148	61,677	80,599	122,128	172,207	214,414	205,346	143,777	82,584
Diseases of the Stomach and Liver	20,291	30,256	44,865	39,991	36,900	48,500	71,272	92,680	98,277	74,040	35,768	14,108
Diseases of the Kidneys	907	5,497	9,718	11,545	11,917	18,186	23,369	26,221	30,370	37,546	29,075	13,862
Diseases of Organs of Generation	68	63	142	49	246	169	313	408	347	284	182	123
Diseases of the Joints	774	8,288	19,092	13,553	9,057	6,321	4,938	4,415	3,666	2,522	969	295
Diseases of the Skin	2,258	1,459	2,004	1,911	1,601	1,478	1,805	2,383	2,768	3,097	2,778	1,647
Violent Deaths...	20,034	75,546	157,472	129,003	107,443	104,368	92,299	76,230	52,287	27,707	15,328	10,544
Other Causes	228,921	34,401	33,123	25,915	23,738	27,113	36,209	49,510	86,839	214,463	483,207	726,146
	Females.											
Smallpox	16,277	28,921	14,993	10,943	10,688	6,849	3,071	1,529	524	174	64	68
Measles	43,810	34,256	8,746	1,967	1,172	789	312	158	65	10	17	—
Scarlatina	64,888	237,324	104,395	20,851	9,249	4,820	2,570	1,220	537	185	64	—
Diphtheria	6,858	33,279	24,532	5,930	2,178	1,503	980	666	334	190	87	51
Whooping-cough	63,805	25,539	2,797	321	51	67	36	24	13	5	12	—
Typhus	22,859	127,997	173,667	138,904	91,507	63,132	49,128	42,600	32,865	21,814	10,685	4,395
Cholera, Diarrhœa, & Dysentery	78,079	26,580	20,010	14,789	20,001	27,275	30,641	31,118	34,286	36,780	34,800	25,534
Other Zymotic Diseases	50,449	53,870	35,320	22,993	20,115	20,568	22,923	25,040	25,290	26,411	19,820	12,726
Cancer	368	1,095	1,765	2,462	3,465	14,164	48,737	84,107	68,597	40,085	17,519	7,802
Scrofula and Tabes Mesenterica	28,264	30,080	42,262	25,528	15,529	12,114	8,764	7,132	5,035	2,496	850	238
Phthisis	20,419	73,601	255,533	476,031	502,758	461,025	343,750	205,261	88,251	27,867	5,614	1,635
Hydrocephalus...	34,450	39,280	19,455	4,109	981	640	370	317	203	118	58	—
Diseases of the Brain	151,070	66,247	70,502	55,267	50,894	53,614	71,775	110,637	141,359	151,818	111,852	56,844
Diseases of the Heart and Dropsy	5,681	25,528	53,843	47,720	45,760	60,719	92,019	135,828	168,784	152,003	85,835	32,280
Diseases of the Lungs	151,398	72,055	47,537	46,248	48,397	58,670	86,326	135,694	186,139	187,799	131,371	75,275
Diseases of the Stomach and Liver	17,868	29,146	38,355	41,571	47,581	57,389	77,170	105,780	109,862	79,992	36,904	12,827
Diseases of the Kidneys	607	2,845	6,029	5,857	8,090	10,982	12,460	13,970	11,738	8,262	3,498	1,261
Ovarian Dropsy and Uterus ...	104	32	397	2,025	5,401	9,849	17,158	19,105	11,470	5,377	1,902	545
Diseases of the Joints	845	6,237	12,296	8,320	4,548	4,416	4,647	4,089	3,424	2,055	752	290
Diseases of the Skin	2,502	1,127	1,507	1,107	955	1,254	1,786	2,021	2,769	3,255	2,376	1,397
Childbirth and Metria	—	—	20	19,467	71,799	89,302	74,440	4,659	—	—	—	—
Violent Deaths	18,142	50,692	32,366	21,171	14,663	12,788	14,500	18,012	14,128	12,244	13,801	14,036
Other Causes	221,257	34,269	33,673	26,419	24,218	28,071	36,437	51,033	94,327	241,060	522,119	752,796

The first portion of the T. may be read thus:—Of 1,000,000 deaths of males aged 25 and under 35 in Eng. ann., on an average of the ten years 1851–60, 12,473 were by smallpox, 70,266 by typhus, 421,391 by phthisis, 80,599 by diseases of the lungs, and so on for the other diseases. The second part of the T. as for females may be read in the same manner.

This same Supplement contained some valuable details regarding the mort. of females in the child-bearing age. The age of 25–35 represents the period of life in which English women bear the greatest number of children, and it was shown that the mort. of women at that age, from all causes, was nearly *one* p.c. (·992). Arranging the eleven divisions of E. and W. in reference to this point, they fall in the order shown in the following T. :

	Registration Divisions.										
	London.	South-Western.	West Midland.	South-Eastern.	South Midland.	Eastern.	Northern.	North Midland.	Yorkshire.	Monmouthshire and Wales.	North-Western.
Average ann. Mort. p.c. of Women aged 25-35, in the Ten Years 1851-60	·875	·890	·950	·965	·973	·999	1·037	1·050	1·067	1·071	1·114
	Mean - ·931						Mean - 1·068				

Absolutely the rate of mort. by childbirth is slightly higher (·090) among women of 35–45, than it is (·089) among women of 25–35, although at the younger age the greater proportional number of women bear children.

The women of London (age 25–35) stand lowest on the scale of mort. ; those of Lancashire Division highest. In general the mort. is lowest in the Southern and highest in the Northern and Welsh Divisions. There is a frequent but not a constant relation between the rates of mort. of mothers and children. In the five divisions where the mean mort. of women was ·931, the mort. of children was 6·184 ; in the five divisions where the mort. of mothers was 1·068, the mort. of children was 6·969.

Exclusive of certain districts in which large lunatic asylums and hospitals disturb the results, there are 58 districts in which the mort. of women of 25–35 from all causes exceeds 1·200 p.c. The T. on the opposite page (237) displays these cases, and gives in juxtaposition the rates of mort. among males and females at the various ages from 15 to 45.

The occupations of the females in some of these districts in some measure account for the high mort. shown. Hospitals and lunatic asylums, when included in the returns under notice, are marked by their initial letters.

The census of the U.S., 1860, showed the ann. rate of mort. p.c. in the white and coloured pop. on the average of the 10 years 1850 to 1860 to have been as follows :

Mean Ages.	White.				Coloured.				England— 10 years—1851-60. Annual rate of Mort. p.c.	
	North.		South.		North.		South.			
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
15-25	·560	·620	1·007	1·375	...	...	1·169	1·335	·766	·796
25-35	2·169	2·470	2·077	2·455	1·645	2·143	2·116	2·197	·957	·993
35-45	1·330	1·445	1·883	1·783	1·828	1·777	1·905	2·202	1·248	1·215
45-55	2·202	2·001	2·544	2·556	2·710	2·718	2·687	3·084	1·796	1·520
55-65	2·120	1·866	3·117	2·886	3·541	3·199	2·955	2·904	3·086	2·701
65-75	4·080	3·730	5·014	4·787	5·081	4·416	5·891	5·629	6·533	5·866
75-85	6·480	6·010	6·862	6·513	6·288	5·171	6·505	6·039	14·667	13·434
85-95	8·730	8·400	8·660	8·213	7·118	6·598	7·044	6·396	31·008	28·956
95 & upwds.	9·100	9·140	8·591	5·789	5·789	5·829	4·696	4·167	...	...

Mr. Samuel Brown, reviewing this T., says, the most remarkable part of it is the much smaller decrement in each decade after 75 years of age among the coloured, both male and female, and both in the North and in the South, than amongst the whites. Indeed, in the orig. returns, he says, the blacks living to whites above 80 is so great, while from 70 to 80 the relative number sinks so suddenly, that it is manifest the latter ages have been favoured at the expense of the decade after 70. The blacks living at 80 to 90 are given as nearly equal to the whites ; but at 90 to 100 the males are 2½ times as numerous, and the females 1¾ times ; and above 100 they are actually 11 or 12 times the number of the whites. This matter requires further investigation.

1861.—There was read before the Inst. of Act. a paper : *On the Rate of Mort. prevailing amongst the Families of the Peerage during the 19th Century* ; the joint production of Mr. A. H. Bailey and Mr. Archibald Day. These writers say :—"The superior longevity of the female sex having long been well known, one of the most striking results of the Combined Experience of the Assu. Offices [*Experience* T. No. 1] was that the mort. amongst assu. females was greater than amongst assu. males. Several explanations of this

T. [referred to on the previous page] *showing Districts where the Average Ann. Rate of Mort. from all causes in the* 10 *Years* 1851–60 *of Females aged* 25–35 *was* 1·200 *p.c. and upwards:*

Number of District.	Districts.	Sex.	Ages.				Number of District.	Districts.	Sex.	Ages.			
			15—	20—	25—	35-45				15—	20—	25—	35-45
34	Rotherhithe ...	M.	·938	1·015	1·189	1·609	438	Basford	M.	·665	·938	·673	·891
		F.	·589	1·022	1·229	1·301			F.	·965	1·203	1·252	1·205
53	Hoo	M.	·476	·763	1·390	1·327	439	Radford *L* ...	M.	·721	·896	·785	·967
		F.	·714	1·636	1·221	1·772			F.	·980	1·120	1·242	1·193
62	West Ashford	M.	·583	·982	·861	·937	444	Shardlow ...	M.	·632	·823	·881	·840
		F.	·754	1·447	1·250	1·094			F.	·886	1·151	1·243	1·188
89	Thakeham ...	M.	·509	1·115	·762	1·014	445	Derby *H*... ...	M.	·846	1·045	1·033	1·298
		F.	1·447	1·434	1·621	1·013			F.	·984	1·030	1·251	1·285
103	Fordingbridge.	M.	·615	1·157	·814	1·157	447	Ashborne ...	M.	·621	·955	·841	1·099
		F.	·796	·980	1·213	·941			F.	·735	·987	1·243	1·178
117	Whitchurch ...	M.	·586	·868	1·131	1·101	453	Macclesfield...	M.	·945	1·009	·987	1·094
		F.	·884	1·632	1·260	1·315			F.	1·347	1·228	1·308	1·483
122	Faringdon ...	M.	·708	·893	·873	1·111	456	Northwich ...	M.	·708	·857	·869	1·189
		F.	·872	1·030	1·258	1·353			F.	·717	1·026	1·280	1·132
125	Wallingford ...	M.	·499	·892	·940	1·077	457	Congleton ...	M.	·885	1·054	·811	1·020
		F.	·861	·906	1·229	1·196			F.	1·120	1·228	1·214	1·471
152	Winslow... ...	M.	·586	·806	·714	·872	461	Liverpool *HH*	M.	·825	1·187	1·596	2·294
		F.	1·049	1·108	1·331	1·202			F.	·716	·948	1·373	1·877
154	Buckingham ...	M.	·608	·888	·855	1·120	467	Leigh	M.	·981	1·008	·943	1·149
		F.	1·145	1·055	1·287	1·325			F.	·862	1·037	1·281	1·376
171	Wellingboro'..	M.	·612	·714	·738	·703	473	Manchester *HL*	M.	·843	1·014	1·293	2·035
		F.	·963	·995	1·216	1·460			F.	·785	·949	1·229	1·737
189	Newmarket ...	M.	·586	·816	·918	1·046	474	Ashton-under-Lyne	M.	·973	1·006	·987	1·281
		F.	·911	1·108	1·282	1·164			F.	1·005	1·040	1·226	1·510
203	Tendring ...	M.	·799	·872	·694	·886	478	Burnley	M.	·748	·806	·807	1·083
		F.	·937	1·061	1·204	1·365			F.	·906	1·102	1·251	1·317
207	Halstead ...	M.	·804	1·318	·868	·963	479	Clitheroe ...	M.	·771	·859	·745	·959
		F.	1·294	1·229	1·221	1·328			F.	·953	1·095	1·238	1·450
211	Risbridge ...	M.	·481	·849	·804	·844	482	Preston	M.	·817	1·019	1·074	1·472
		F.	1·108	1·197	1·325	1·042			F.	1·032	·943	1·208	1·539
214	Thingoe	M.	·535	·907	·905	·904	489	Skipton	M.	·774	1·028	·803	·928
		F.	1·016	·888	1·326	1·192			F.	·948	1·225	1·279	1·127
221	Samford	M.	·758	1·043	772	·819	490	Pateley Bridge	M.	·793	1·095	·696	·769
		F.	1·077	1·526	1·234	1·353			F.	1·129	1·510	1·250	1·209
251	Cricklade ...	M.	·546	·722	·653	1·033	493	Otley	M.	·859	1·074	·897	1·093
		F.	1·029	·974	1·208	1·194			F.	1·056	1·239	1·260	1·353
255	Marlborough ..	M.	·277	·623	1·151	·857	494	Keighley ...	M.	1·018	1·046	·761	·997
		F.	·752	·968	1·232	1·329			F.	1·201	1·282	1·238	1·316
258	Bradford ...	M.	·637	1·111	1·025	1·218	496	Saddleworth ...	M.	·812	·768	·918	1·155
		F.	·929	·913	1·299	·983			F.	1·112	1·233	1·405	1·331
259	Westbury ...	M.	·671	1·025	·863	1·053	503	Wakefield *L* ...	M.	·884	1·019	1·163	1·668
		F.	·766	1·101	1·223	1·090			F.	·861	1·006	1·418	1·579
312	Scilly Islands .	M.	·862	1·333	1·719	·889	544	Weardale ...	M.	·624	·952	·811	1·239
		F.	·538	1·058	1·200	1·361			F.	·870	1·336	1·317	1·481
342	Stow-on-Wold	M.	·349	·705	·711	·929	551	Gateshead *L* ...	M.	·725	·832	1·072	1·518
		F.	·602	·785	1·202	1·070			F.	·735	·925	1·227	1·537
355	Cleobury Mortimer	M.	·725	·578	·775	·785	564	Alston	M.	·636	1·145	·856	1·497
		F.	1·161	·904	1·331	·887			F.	·909	·941	1·225	1·381
360	Shrewsbury *HL*	M.	·781	1·157	1·455	2·140	572	Booth	M.	·525	·682	1·073	1·035
		F.	·824	·832	1·346	1·421			F.	·679	·840	1·307	1·111
367	Stafford *HLL*	M.	·678	·829	1·365	1·792	579	Pontypool ...	M.	·900	1·126	1·093	1·297
		F.	1·094	·988	1·348	1·508			F.	·763	1·061	1·217	1·304
372	Leek	M.	·777	·764	1·028	1·053	582	Merthyr Tydfil	M.	1·137	1·463	1·319	1·413
		F.	1·310	1·211	1·262	1·258			F.	·847	1·075	1·342	1·513
415	Loughborough	M.	·588	·766	·881	·842	601	Crickhowell ...	M.	·931	·898	·913	1·094
		F.	·976	1·039	1·219	1·337			F.	·914	·968	1·500	1·257
416	Barrow-upon-Soar	M.	·538	·799	·864	·856	607	Newtown ...	M.	·797	1·047	1·058	1·052
		F.	·868	1·097	1·201	1·213			F.	·986	1·300	1·290	1·426

apparent anomaly have been offered, none of them very satisfactory, and some altogether absurd; but after a careful consideration of the matter, *we cannot help thinking that the anomaly does not really exist at all.*" They then proceed to state their reasons for arriving at this conclusion

According to Dr. Farr's T., the mort. in the period of infancy is greater among boys than girls; from 2 to 40 years of age the mort of females is in excess, while for the remainder of life the females have the advantage over the males in a marked degree. And we find that the remarkable tenacity of female life in old age so far outweighs the greater mort. of the sex shortly before and during the child-bearing period, as to give the female sex an average mean duration of life greater than that of the male throughout the whole of the T. *These results the present obs. confirm in every respect.* They exhibit the superior vitality of females in infancy, their remarkable tenacity of life in old age, and their greater mort. in youth and the prime of life; for, notwithstanding the abnormal mort. of the males between the ages of 20 and 30, it will be found that, taking the entire period from 5 to 45 years

> of age, the female mort. is in excess. Bearing these peculiarities in mind, it was certainly somewhat startling to find, on referring to the Combined Experience T., that the female mort. in the decade 70–79 was both so great absolutely, and so much in excess of the male, especially as between the ages 45 and 70 the female mort. is less.

The results of their investigation on this latter point we have already given in our hist. of *Experience* T. No. 1, under date 1861. They add:

> In the experience of the *Eagle* the female mort. was lower than the male, taking all ages together; while at the same time, under the age of 42, it was considerably in excess. And it must not be forgotten that the average period of obs. of each life, although greater than with the Combined Offices, did not exceed 8½ years; so that there is reason to believe that if the obs. were continued to the present time, *the greater general vitality of the female sex would be still more apparent*. . . .
>
> Not only in the *English* Life T., but also in the obs. on the inhabitants of the Healthy Districts, on assured lives, and on the Society of Friends, the mort. of the female in the youthful and earlier adult ages is found to be greater than that of the male; and in *every* pub. T. of Mort. to which we have been able to refer, excepting only Mr. Finlaison's, and the *Swedish* T., *the mort. of the female is, at particular ages, in excess of that of the male*. The peculiarity of Mr. Finlaison's results may perhaps be accounted for by the prob. that a large proportion of the females in his obs. are unmarried, and by the scantiness of his materials in middle life, compared with their abundance at the older ages. . . .
>
> The result of our inquiries on this particular subject—the comparative mort. of the sexes—has been to confirm the views of Dr. Farr, and not those of Mr. Finlaison. On the whole, if human life be divided into three great periods,—of infancy, maturity, and old age,—the weight of evidence is in favour of the general conclusion, that at the two extremes the mort. of the female sex is less, and at the intervening period greater, than that of the male; *the prob. after-lifetime being, at all ages, greater for the female*.

In the obs. upon which the T. was based the males outnumbered the females—"a greater number of cases in the latter sex having to be rejected owing to deficiency of dates. Had it not been for this circumstance, the results of the general T. would have been even more favourable." They then proceed to summarize the results of their inquiry, and therein they say:

> The information obtained upon the comparative mort. of the sexes leads to the conclusions, that T. of Mort. for all purposes of life assu. *should be derived from obs. on male lives chiefly, or exclusively*; that the greater vitality of the female will not justify any reduction of prem. in contracts of assu., because, on account of the large proportion of pol. that are suffered to lapse, the greatest amount of risk will usually be incurred in middle life, at which particular period the female mort. is greater than the male. On the other hand, *the distinction of sex is of serious moment in all contracts of annu., immediate, deferred, and contingent; because in those cases the most important period is that of old age, where the distinction between the mort. of the sexes is most marked*. The distinction is also important in another branch of our pursuits, where we believe it is frequently overlooked—we mean in the valuation of rev. interests.

We now reach the T. and shall here give only such abstracts as will illustrate the results regarding female lives—the full T. will appear under PEERAGE, MORT. T. RELATING TO.

Age.	Expectation.	
	Males.	Females.
0	52·00	53·71
5	53·16	54·02
10	49·04	50·16
15	45·02	46·77
20	41·46	43·48
25	38·67	40·16
30	35·51	36·82
35	31·97	33·35
40	28·33	29·93
45	24·80	26·66
50	21·40	23·08
55	18·00	19·54
60	14·56	16·42
65	11·41	13·74
70	8·77	11·28
75	6·48	9·22
80	4·58	6·92
85	2·74	5·54
90	1·64	4·10

The following T. shows the "ann. mort. p.c." for females, first at quinquennial, and then at decennial periods; and the same is contrasted with other well-known T.; and also with Peerage males.

Age.	FEMALES.			MALES.		
	Peerage Families.	*English* T. No. 1.	*Gov. Annu.* T.	Peerage Families.	Difference between Females and Males.	
					Plus.	Minus.
Under 5	1·882	6·037	...	2·227	...	·345
5 to 9	·440	·900	·668	·345	·095	...
10 ,, 19	·716	·639	·648	·536	·180	...
20 ,, 29	·830	·917	·850	1·046	...	·216
30 ,, 39	·921	1·120	·995	·870	·051	...
40 ,, 49	1·179	1·389	1·149	1·227	...	·048
50 ,, 59	1·708	2·107	1·621	1·764	...	·056
60 ,, 69	3·508	4·079	3·063	3·757	...	·249
70 ,, 79	6·092	9·095	7·119	8·714	...	2·612
80 ,, 89	11·601	19·461	16·724	23·836	...	12·235

In vol. ix. of *Assu. Mag.* there is a letter from Mr. H. W. Porter, B.A., on Finlaison's Gov. T., and on the Eng. Life T.; and a reply to the same by Mr. A. H. Bailey, wherein many points of importance regarding female life are brought into prominence. But as we have already reviewed the T. there under consideration, we need not enter upon the discussion here.

In the 7th Detailed Rep. of the Scottish Reg.-Gen. returns for 1861, Dr. Stark deals with the child-bearing risk incident to female life. He says:

> From the age of 15 the women begin to marry. and it might have been imagined that the superadded dangers of childbirth would in the child-bearing ages (15-45) have raised the female death-rate higher than the male. But a 7 years' result proves that in Scot. the female death-rate of these ages is lower than the male death-rate. Thus in every 10,000 persons of each sex at each age, only 65 females but 72 males die ann. between the ages of 15 and 20; 80 females but 99 males die ann. between the ages of 20 and 30; 100 females but 106 males die ann. between the ages of 30 and 40; while only 116 females but 138 males die ann. between the ages of 40 and 50. *Thus at every one of these ages females die in smaller proportions than males.*

One of the offices which first followed the teachings of exp. in regard to female insured life was the *National Provident*, which, in a prosp. issued about 1861, announced that its charge for the ins. of female lives was a small *addition* upon that charged for male lives; while the rates for *annuities* depending on the lives of females were *less* than for similar benefits on the lives of males. This latter feature is contrary to the practice of the offices generally, as it is to that of the Gov. office.

In 1861 Dr. J. C. Steele, M.D., Sup. of Guy's Hospital, Lond., read before the Statistical So. a paper: *Numerical Analysis of the Patients treated at Guy's Hospital for the last Seven Years, from* 1854 *to* 1861. [*Statis. Journ.* xxiv. p. 374.] The writer says: "It will be observed that the results of treatment are in each department [medical and surgical] more favourable in the case of females than males, *in consequence of the less liability of the former to attacks of acute disease.*"

1862.—The Eng. Reg.-Gen. in his 25th Rep. reviews the mort. of males and females at the various periods of life, and says: "Women of the age of 15 and under 45 were cut off in great numbers in the cholera years." For further information on this subject see our art. CHOLERA, ASIATIC; and also EPIDEMICS, under dates 1864 and 1866.

Dr. Stark, in the 8th Detailed Rep. of the Scottish Reg.-Gen., reviewing the deaths of 1862, returns to the subject of the relative mort. of males and females, and says thereon:

> It is now an estab. fact, that in this country males are cut off in a higher proportion than females, and that the ratio of that higher death-rate in the males is nearly constant from year to year. Thus in 1862 males died at the rate of 227 deaths in every 10,000 males living, while females were only cut off in the proportion of 209 deaths in a like pop. of females. An 8 years' average gives the ann. proportion of 2189 male deaths in every 100,000 males, but only 2002 female deaths in every 100,000 females. The ann. difference between the male and female death-rate is therefore nearly the same year after year: being about 0·18 of a per-centage in favour of the female life; or, in other words, about 18 more men die ann. in every 10,000 males than women die in every 10,000 females. It is interesting to note that in Eng. the difference between the mort. of the males and females is nearly the same as in Scot., viz. a difference in favour of the females of 0·17 of a per-centage; so that it may be assumed as an ascertained fact that over the whole of Britain the female mort. is less than that of the male.

1863.—In the paper by Mr. Jardine Henry on Mort. T., an abstract of which appeared in vol. xi. of *Assu. Mag.*, attention is called to the extent of superiority of female over male longevity, as brought out in the various T. referred to in that art. This author's views on the question have already been noticed under date 1859 in this art.

1864.—*English* Life T. No. 3, by Dr. Farr, was pub. this year. In our hist. of that T. we have already given its main results for females as well as for males—some of its columns being of great interest. The following comparative results of the 3 *English* T., for *Females*, will be useful. A corresponding T. for *Males* is given at p. 532, Vol. II. of this work. Money values calculated at 3 p.c.

Ages.	0	10	20	30	40	50	60	70
Expec. of Life.								
Eng. T. No. 1.	42·18	47·81	40·81	34·25	27·72	21·07	14·40	9·03
Eng. T. No. 2.	42·04	47·86	40·65	34·06	27·50	20·84	14·49	9·12
Eng. T. No. 3.	41·85	47·67	40·29	33·81	27·34	20·75	14·34	9·02
Ann. Prem. to ins. £100.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Eng. T. No. 1.	2 2 1	1 4 8	1 11 1	1 19 3	2 11 6	3 12 6	5 14 8	9 11 3
Eng. T. No. 2.	2 2 3	1 4 6	1 11 3	1 17 7	2 12 3	3 14 0	5 13 11	9 9 2
Eng. T. No. 3.	2 2 6	1 4 7	1 11 10	2 0 1	2 12 8	3 14 3	5 15 3	9 11 3
Present value of an Annu. payable at end of every Yr.	£	£	£	£	£	£	£	£
Eng. T. No. 1.	18·93	23·11	21·38	19·51	17·22	14·29	10·56	7·01
Eng. T. No. 2.	19·89	24·17	22·34	20·44	18·10	15·12	11·61	8·08
Eng. T. No. 3.	19·85	24·14	22·20	20·33	18·03	15·09	11·52	8·01

The Reg.-Gen. says, 25th Rep. 1864: The mort. of the two sexes differs considerably at different ages; thus in the first 5 years of life the excess of mort. among boys over that of girls is in the ratio of 7·216 and 6·216 or 1 p.c.; in the next period it is only slightly in excess; but from the age of 10 to 25 and 35 the young women die in a greater proportion than young men, the cause of which it is important to investigate; at the age of 45 and upwards, the women die at a lower rate, and live longer afterwards than men. *These results were drawn from the census returns of the three censuses of* 1841, 51, and 61.

The 6th Rep. of the medical officer of the Privy Council, pub. 1864, gives some remarkable instances of the increased mort. of females following in-door employments in certain districts of the country; and thus throws light upon the T. of localities showing an undue mort. for females given under date 1860 in this art.—See LUNG DISEASES.

The fever epidemic in Scotland this year cut off per 1000 of each sex of the pop. 169 males, and but only 154 females.

1865.—Mr. John Mann, one of the medical examiners of the *Brit. Empire* Mut., pub. *A Contribution to the Medical Statistics of Life Assu., with Hints on the Selection of Lives.* The author, noticing the existence of localities wherein the mort. of female lives is greatly in excess of male lives, not of the gen. pop. only, but of the males of the same district, says:

> The conclusions of actuaries are no doubt correct, as deduced from the vast mass of all ages, sexes, occupations, and localities, which forms the basis of their calculation. *But it is a matter of grave importance to life assu. cos. to be more familiar with the waves which rise above, or fall below, this dead level of the ocean of life, for it is in these more stormy latitudes that the path of their voyage lies.*

This is in his preface. When we reach the body of his work, he speaks on the authority of the experience of his particular office, which had in its earlier years accepted female lives at a lower scale of prems. than male lives. From this cause prob. his attention had been drawn especially to this point, and we must therefore carefully note the following:

> Almost all the cases of female life assu. are made upon the lives of *wives*. Apart from the *moral* objection to this kind of life ins., we see there is also the *commercial* objection, partly from their occupation being in-doors, partly from their greater liability to death from some causes which are not known to the other sex, such as parturition; partly from the greater mort. of parturition and its immediate consequences, upon that class of females who are generally included amongst female insurers. Partly perhaps from the greater sensitiveness and exposure of the married female to coldness, neglect, anxiety or ill-usage on the part of the husband,—and the larger share which falls to her lot in the labour of watching over infantile diseases, from loss of sleep, and from various sufferings connected with the *res angusta domi* [the straitened circumstances] of domestic life.
>
> But whatever be the causes, there can be no doubt of the *fact*, that not only the mort. of this class from phthisis is high, but that it occurs at an earlier period of life than in the other sex, *so that it is very doubtful whether joint assu. upon the lives of husband and wife should be at all encouraged.*

In 1865 Dr. Theodor Wittstein, Act. of the *Hanover* L. Ins. Co., made known the results of an investigation in the mort. exp. of that Co. during a period of 34 years, 1831-2 to 1864-5; and in this T. the mort. of the sexes is distinguished, but neither the expec. of life nor the mort. p.c. in such a form as to be useful for comparison here.

1866.—The pop. of the U.K., including the islands, was estimated at 14,775,810 males and 15,553,397 females. England differs from other countries of Europe in this respect: it has 250,356 men in the army, navy, and merchant service abroad, on the seas, and in English possessions. This leaves 14,525,454 males at home against 15,553,397 females. The females exceed the males in the U.K. by 1,027,943. After deducting the men abroad having English homes, the number is reduced to 777,587 women. The proportionate number is greatest in Scotland, least in Ireland.

Nevertheless, says Dr. Farr, if our calculation be correct, the men must be somewhere in existence; and in fact, in *America* and in *Australasia* alone, at the last census the males found exceeded the females nearly by a million (972,530). Allowing for the share of other nations in the surplus, there can be no difficulty in identifying the men, of which the 777,587 women at home complete the calculated couples. The men are in Newfoundland, New Brunswick, Canada, Australasia, and the U.S., whither the women have hitherto hesitated to sail from home across the ocean; but with constant magnetic communication, commercial intercourse, and the intimate union of the people on both sides of the seas, the equilibrium of the sexes cannot fail in the end to be re-established.

In vol. x. of the *Bulletin de la Commission Centrale de Statistique*, pub. (1866) under the authority of the Belgian Gov, M. Quetelet, assisted by M. Heuschling and other zealous and enlightened officials, brought together a summary of the leading facts and explanations of the method in which the Censuses are taken in different countries. The comparisons relate chiefly to the pop. returns for 1861. In T. A (appendix) is given the total number of inhabitants, male and female, of the principal countries in Europe; the extent of surface in hectares; the proportion of females to 1000 males, and the number of hectares to every 1000 inhabitants. It thus appears in the pop. of Europe amounting, about the year 1861, to 278,577,000, that in countries in which the sexes were distinguished, the number of males was 125,521,000, and females 127,365,000, or 1015 females to 1000 males. The extremes of difference were found in *Saxe Coburg*, which showed 1077 females to 1000 males; and in *Greece*, which to 1000 males had only 916 females. The countries which contained the smaller proportion of females according to these returns were *Italy*, *Belgium*, the *Roman States*, and *Greece*.

In the *Supplementary Rep. on the Mort. Experience of the Scottish Equitable Life Assu. So. from* 1831 *to* 1864, by Dr. Robertson, printed 1866, occurs the following:

> It will be seen that during the decennial period of life, commencing at 25 and terminating with 34, the mort. of females has been found to be considerably in excess of that of males assured; and even slightly to exceed the mort. of females in all Eng., as stated in Dr. Farr's most recent and most valuable pub., the *English* Life T. No. 3. When it is considered that assu. offices have in their favour the benefit of "selection," this mort. among females is at first sight a little startling. It is not here pointed out for the first time; on the contrary, it is repeatedly alluded to by Dr. Farr in his Rep. to the Reg.-Gen. of Eng.; and is one of the most remarkable results brought out by the well-known T. [*Experience* No. 1]. It is, however, at variance both with popular belief and with Mr. Finlaison's T. employed in the sale of Gov. Annu. Unquestionably it has been observed in the experience of the *S. Equitable*, and is, I think, susceptible of satisfactory explanation. For it appears to be well ascertained that the death-rate of married women is, at the earlier period of child-bearing life (and of course between 25 and 34), far higher than the death-rate of males at corresponding ages; indeed, so strong is the influence of this preponderance, that the ann. mort. of all females, married and unmarried, exceeds that of all males between 25 and 34. But beside, the ratio of married to single females is at the child-bearing ages, and indeed at all ages, far greater among the assured than among the gen. pop. Consequently it need cause no surprise to find that between 25 and 34, a higher rate of mort. prevails among females assured than among males assured.

Of 173 females whose deaths are recorded in the experience of this So., 165 or 95⅓ p.c. were "married or widows"; while of 20 insured females who died aged 25 and under 35, 18 or 90 p.c. were "married or widows." Dr. Robertson considers that these relative numbers appear sufficiently to explain the exceptionally high death-rate among the female members of this So. who had died at ages between 25 and 34, both inclusive. "As for the mort. among females at more advanced ages, the So.'s T. show it to have been decidedly lower than that of males at corresponding ages—an obs. quite in accordance with the statis. of the gen. pop." Finally:

> The slight excess of the figures expressing the average ann. mort. of females at all ages above the average ann. mort. of males at all ages (1·544 p.c against 1·457 p.c.) is prob. due to two circumstances. 1. To the large mort. among young married females above alluded to; 2, and *chiefly*, as I conceive, to the fact that as a gen. rule the ages of those "at risk" have been greater among females than among males. A slight examination of the T. in which the sexes are distinguished will serve to verify this last statement.

1867.—Mr. W. M. Makeham read before the Inst. of Act. an able paper, *On the Law of Mort.;* wherein the "force of mort." in regard to male and female life is examined with great care. We shall find it more convenient to deal with the paper under FORCE OF MORT.

1869.—The investigations which resulted in the pub. of *Experience* T. No. 2, in 1869, of which we have already given a detailed hist., brought to light some add. facts regarding female lives. The total number of female lives then under separate obs. was 16,604, and these were healthy lives only. In the diseased class, as also with lives exposed to extra risk from climate and occupation, the sexes were not distinguished.

A series of interesting obs. were made with regard to the effect of selection on female lives. These it will be more convenient to notice under SELECTION, EFFECT OF.

Comparing the mort. of males and females together in quinquennial groups of ages, we find that *under* 45 *years of age the female mort. is greatly in excess*, descending after age 25 from about 70 to 40, 30, 20 p.c. excess for each successive quinquennial period of male life, till it is nearly equal at 45–49; then about 10, 15, and 20 p.c. respectively less than the next three quinquennial periods of male life, till age 65. This position is illustrated by the following T.:

Mort. p.c. of Healthy Male and Female Lives Compared.

Ages.	Male. (1)	Female. (2)	Differences, being excess (1)	(2)	Ages.	Male. (1)	Female. (2)	Differences, being excess (1)	(2)
15 to 19	·47	·86	...	·39	60 to 64	3·48	2·86	·62	...
20 ,, 24	·69	·85	..	·16	65 ,, 69	5·02	4·37	·65	...
25 ,, 29	·69	1·18	...	·49	70 ,, 74	7·33	6·84	·49	...
30 ,, 34	·82	1·13	...	·31	75 ,, 79	11·00	10·66	·34	...
35 ,, 39	·95	1·21	...	·26	80 ,, 84	16·52	12·51	4·01	...
40 ,, 44	1·07	1·28	...	·21	85 ,, 89	22·35	22·82	...	·47
45 ,, 49	1·36	1·39	...	·03	90 ,, 94	32·73	22·68	10·05	...
50 ,, 54	1·74	1·57	·17	...	95 ,, 99	54·55	33·33	21·22	...
55 ,, 59	2·40	2·02	·38	...					

The Committee point out that "if the numbers of females assured were sufficiently great, this excess of mort. at the ages under 50 *would very seriously affect the profits of an office in its early periods*, and would be scarcely compensated by the lower rate of mort. at the higher ages."

Notwithstanding this, the mort. among females generally by this T. is much less, at all ages, than under *Experience* T. No. 1—females. It is, however, much in excess of the Peerage rates (Bailey and Day) until ages 55-65; and again exceeds it considerably from age 65 to the end of the T. It is also at nearly all ages much higher than that of the Gov. Annuitants (Finlaison).

At the age of 40 a comparison of the healthy *female* T. with that for **diseased** lives shows nearly the same decrement: 7544 of the former, and 7574 of the **latter** remaining, against 8223 healthy males out of 10,000 assumed to enter at **age 10. But** after that age the diseased lives rapidly diminish by death, being reduced to 2785 at **age** 70, whilst the healthy females, 3799, are almost exactly the same as the healthy **males**, 3793. It is possible, however, that the T. for female lives, as also that for **diseased** lives, were rendered liable to fluctuations from the relatively small number of obs.

In the expec. of life the improvement in the latter part of female life tells **so much**, that though at age 10 the female expec. is only 48·2, whilst that of healthy males is **50·3;** yet at age 30 the expec. is nearly the same for both sexes, 34·6 and 34·7; **and after that** age the female expec. is considerably higher at all ages.

In the T. of male and female lives combined, under the age of 55 *Experience* T. **No. 2** differs very little from *Experience* T. No. 1—both being considerably below the ***Carlisle*** T. From age 55 to the end of the T., *Experience* T. No. 2 is more favourable **than** *Experience* T. No. 1: being about 5 p.c. less at all ages; but at all ages above 50 it exceeds the *Carlisle*, except at ages 60–64, where it is somewhat less.

The following tables, together with the T. given under EXPERIENCE T. NO. 2, **will** elucidate all these points.

Comparison of Ann. Mort. p.c.

Ages.	Healthy Lives. Male and Female.		*Carlisle* T.	Females only.			
				Healthy Lives.		*Peerage.*	*Gov. Annuitants.* A. G. Finlaison.
	Exp. No. 2.	*Exp.* No. 1.		*Experience* No. 2.	*Experience* No. 1.		
	No. of Entrants.			Number of Entrants.			
	146,847	62,537		16,604	4202	3252	16,538
	Annual Mort. p.c.			Annual Mort. p.c.			
15 to 19	·54	·71	·68	·76	·02	·88	·81
20 — 24	·71	·75	·70	·85	2·01	·79	·86
25 — 29	·73	·80	·82	1·18	1·35	·92	·83
30 — 34	·85	·88	1·01	1·13	1·56	·86	·98
35 — 39	·97	·97	1·09	1·21	1·59	·98	1·01
40 — 44	1·09	1·10	1·41	1·29	1·46	1·22	1·05
45 — 49	1·36	1·36	1·44	1·39	1·69	1·14	1·25
50 — 54	1·72	1·80	1·52	1·57	1·85	1·36	1·45
55 — 59	2·35	2·48	2·20	2·02	2·61	2·07	1·80
60 — 64	3·38	3·52	3·68	2·86	2·94	3·02	2·36
65 — 69	4·90	5·14	4·45	4·37	4·82	3·96	3·76
70 — 74	7·23	7·54	6·97	6·84	6·89	5·55	5·44
75 — 79	10·92	11·03	10·54	10·66	15·67	6·42	7·90
80 — 84	15·44	16·01	13·86	12·51	21·05	10·89	11·03
85 — 89	22·50	23·46	19·92	22·82	...	13·52	19·27
90 — 94	29·65	37·43	28·61	22·68	...	...	...

The reader must now continue on to the two tables which for typographical reasons we give on pp. 244—247.

In a preliminary discussion on the results of this T. opened by Mr. Samuel Brown at the Inst. of Act., 1869, Dr. Farr said:

> I will just make one remark about the mort. of females, as it is a sort of medical subject which, I think, Mr. Brown has not fully explained. I know it is sometimes the practice of offices to assure women who are actually pregnant, and I think it is pretty certain that pregnancy does increase the risk on female lives. With regard to the whole pop. of France, it has been shown that the mort. of women at child-bearing ages is considerably greater than that of males. Are women who are assu. while in a state of pregnancy thrown into the general mass, or are they distinguished in any way? The President: We have no means of knowing. These returns are merely those of persons accepted, and we have not the medical returns before us. If they had been charged an extra rate, they would have come amongst the diseased lives. I think, if my recollection serves me, they were all excluded from the healthy lives. I see the gentleman here who assisted us in the work—Mr. Hopkinson—perhaps he can tell us. Mr. Hopkinson: There were about 120 cases charged extra for pregnancy, and they were not included at all; they were not classed, but thrown away entirely. These were the only cases in which we had the means of distinguishing whether the females were pregnant or not.

Mr. T. B. Sprague said: "It is a very important question how we shall deal with them, whether we must decline to take them at all under a certain age, or whether we should follow the example of our American cousins, and charge all women of child-bearing age an extra ann. prem. of a half p.c., which seems a rather extreme measure."

Some other remarks of Mr. Sprague, as also the obs. of Mr. A. H. Bailey, we have already given in our hist. of the T.

Mr. Brown, by way of reply, said:

> Mr. Sprague asks a question with regard to female lives, and he stated that the American offices charge a half p.c. during the child-bearing period. It does not appear that a half p.c. in many cases will be sufficient, for, so far as we can trace this experience, it started at 70 p.c. higher than male life, and only descended to an equality at the middle period, which is about 45 years of age, when child-bearing ceases. Therefore, half p.c. will scarcely be sufficient. I imagine that a half p.c. on the sum assu. is not 70 p.c. upon the male life prem., even at the young periods of life; and though it gradually descends, even a much higher rate will be required, supposing that that is the only risk to which we are exposed in selecting female lives. I am, however, very much disposed to think that there is another great disadvantage in the selection of female lives, and that is found in the fact that they do not undergo the same careful medical examination that males do, and it is, in fact, very difficult to obtain the proper kind of medical examination at all. I think also that we are too indifferent about obtaining those specific answers from friends in a sufficiently detailed form; so that we are very much under the necessity of accepting these lives without full information being obtained.

Dr. Adams Allen, in his *Medical Examinations for Life Ins.* 5th ed. 1869, gives us, under head of "Female Applicants," some of the views entertained regarding the ins. of female lives in the U.S.:

> Although some cos. decline all female risks, it is safe to say that, taken together, they are equally eligible as those of males. As before remarked, even the child-bearing period does not bring to them a mort. materially preponderant over that of males of similar age. Indeed, if anything, the exposures and vicissitudes to which males are ordinarily subjected, during the active years of adult life, more than balance, in fatal results, the incidents of the female life during this period.
>
> Certain anatomical differences with regard to the height, weight, chest measurement, and capacity have previously been noted. [HUMAN BODY, PROPORTIONS OF.]
>
> There is, numerically, a greater proportion of nervous temperaments, and the modes of life more frequently expose to the evils of deficient ventilation and sedentary habits. But to these their systems become accustomed, by well known physiological laws, so that not as deleterious results are produced as would be in the male.
>
> The regularity and perfection of the menstrual function is to be ascertained; it being remembered that individual peculiarities in this respect are to be weighed rather in their relation to the general health than with reference to exact rules. If there is good health otherwise, irregularities in the menstrual function scarcely impair the risk. But at the climacteric period, the difficulties incident to the cessation of the function must be carefully inquired after. This is an objectionable time to insure; but in the absence of notable disturbance of the general health, or evidences of local disease, the party need not be declined. An anæmic or chlorotic condition, or signs of the cancerous cachexia, will exclude.
>
> Primary gestation impairs the risk, but, if this proceed without difficulty or danger to its termination, subsequent pregnancy need not be considered as adding to the risk. Statistics are said to show that the mort. from first labours and ensuing puerperal fever is about twice that of all ensuing labours up to the ninth; after the ninth, the danger is increased with each succeeding pregnancy and parturition. Whether the proportion is closely approximated or not, there is no doubt of the general truth of the proposition.

He then enters upon the consideration of "labours requiring instrumental assistance," "emaciation and exhaustion during lactation," and other questions which most obviously present themselves to the consideration of medical men; but we do not propose to follow them. He adds:

> The facts with regard to the transmissibility of hereditary diseases, insanity, etc., in certain instances, *rather to the females than the males of the family*, and *vice versô*, may have weight in deciding upon the risk.

1870.—In vol. xvi. of *Assu. Mag.* (p. 43) is contained Messrs. Bailey and Day's T. for females of the British Peerage, adjusted by Dr. T. M. Thiele, of Copenhagen; and on p. 118 of the same vol. will be found some explanations by the same learned authority of his process.

About this date (1870) the *New York Life* issued to its agents the following circular:

> Our past exp. in ins. on the lives of females has proved that our present rates are not remunerative, and the proportion of deaths under such pol., compared with ins. on the lives of males, has caused us to re-consider the rates for pols. on the lives of women. We have decided that on all such risks in future we will charge 1 p.c. extra, and grant such insurances only on our ten-years' non-forfeiture plans. We inclose an additional form to be filled by the Co.'s medical examiner in above cases. You are requested to attend strictly to the above new regulation in transmitting, in future, any applications on the lives of females.

By the U.S. census of 1870 it appeared that 1080 males committed suicide as against 285 females.

1871.—At the census of E. and W. this year the females enumerated were 11,653,332, the males 11,058,934—giving an excess of 594,398 women at home; the men of the corresponding ages to the extent which their numbers had not been reduced by the higher mort. prevailing among males being on the continent, in the colonies, or in foreign lands. To 100,000 women of all ages there were 94,900 men at home. The proportion of men to women at home was thus less than at any previous census since 1811. In 1801, too, the disparity was great; but these dates were during the great European wars, when men were abroad in the several services. To complete this view of the proportions of the two sexes living at home, the ages must be taken into account. There was an excess of boys over girls living under age 15. The women exceeded the men in considerable numbers in the early and middle, and still more in the advanced ages, when their longevity comes into play.

In 1871 there was pub. *Mort. Exp. of the Prudential Assu. Co. in the Industrial Branch for the Years* 1867, 1868, 1869, 1870, *with Obs. by Henry Harben, Sec. to the Co.* Herein we had hoped to have gained some insight into the relative rates of mort. among males and females in the industrial orders; but the preface frankly tells us: "The T. are

HEALTHY MALES—(*unadjusted*).

Age.	Exposed to risk.	Died.	Ratio of 10,000.						Age.
			Prob. of Dying in a Year.	Prob. of Living a Year.	Living.	Dying.	Expec.		
0	21	...	...	...	...	...	58·43		0
1	47·5	...	...	...	...	...	57·43		1
2	65	1	...	...	...	...	56·43		2
3	79	...	...	...	...	...	56·31		3
4	93·5	...	...	...	...	...	55·31		4
5	119	1	...	...	...	...	54·31		5
6	147·5	1	...	...	...	...	53·76		6
7	186·5	...	...	...	...	...	53·13		7
8	239·5	...	...	...	...	...	52·13		8
9	309·5	1	...	...	...	...	51·13		9
10	379	3	·00792	·99208	10000	79	50·29		10
11	434	...	·00000	1·00000	9921	0	49·69		11
12	491·5	2	·00407	·99593	9921	40	48·69		12
13	578	2	·00346	·99654	9881	35	47·88		13
14	731	3	·00410	·99590	9846	40	47·05		14
15	908	2	·00220	·99780	9806	22	46·24		15
16	1129	...	·00000	1·00000	9784	0	45·34		16
17	1421	6	·00422	·99598	9784	41	44·34		17
18	1810·5	11	·00608	·99392	9743	59	43·53		18
19	2414	17	·00704	·99296	9684	68	42·79		19
20	3293·5	19	·00577	·99423	9616	56	42·09		20
21	4578·5	32	·00699	·99301	9560	67	41·33		21
22	6397	40	·00625	·99375	9493	59	40·62		22
23	8534	66	·00773	·99227	9434	73	39·87		23
24	10936	75	·00686	·99314	9361	64	39·18		24
25	13622·5	70	·00514	·99486	9297	48	38·44		25
26	16339	113	·00692	·99308	9249	64	37·61		26
27	19170·5	124	·00647	·99355	9185	60	36·90		27
28	21837	171	·00783	·99217	9125	71	36·14		28
29	24588	181	·00736	·99264	9054	67	35·42		29
30	27112·5	224	·00826	·99174	8987	74	34·68		30
31	29213	215	·00736	·99264	8913	65	33·96		31
32	31231	260	·00832	·99168	8848	74	33·21		32
33	32969	274	·00831	·99169	8774	73	32·48		33
34	34535·5	300	·00869	·99131	8701	76	31·75		34
35	35818·5	295	·00824	·99176	8625	71	31·03		35
36	36840·5	326	·00885	·99115	8554	75	30·28		36
37	37360	357	·00956	·99044	8479	81	29·55		37
38	37804·5	389	·01029	·98971	8398	87	28·83		38
39	38112·5	405	·01063	·98937	8311	88	28·12		39
40	38195	377	·00987	·99013	8223	81	27·42		40
41	37838	396	·01047	·98953	8142	85	26·69		41
42	37258·5	399	·01071	·98929	8057	87	25·96		42
43	36534·5	387	·01059	·98941	7970	84	25·24		43
44	35693	421	·01180	·98820	7886	93	24·50		44
45	34735·5	429	·01235	·98765	7793	97	23·79		45
46	33660·5	421	·01251	·98749	7696	96	23·08		46
47	32502	460	·01415	·98585	7600	107	22·37		47
48	31228	440	·01409	·98591	7493	106	21·68		48
49	30055·5	459	·01527	·98473	7387	113	20·98		49
50	28855·5	476	·01650	·98350	7274	120	20·30		50
51	27510·5	479	·01741	·98259	7154	124	19·63		51
52	26208·5	446	·01702	·98298	7030	120	18·97		52
53	24785	426	·01719	·98281	6910	119	18·29		53
54	23426	444	·01895	·98105	6791	129	17·60		54
55	22170·5	509	·02296	·97704	6662	153	16·93		55
56	20746	479	·02309	·97691	6509	150	16·32		56
57	19377·5	463	·02389	·97611	6359	152	15·69		57
58	18116·5	455	·02512	·97488	6207	156	15·07		58
59	16890·5	428	·02534	·97466	6051	153	14·44		59
60	15672·5	488	·03114	·96886	5898	184	13·80		60
61	14392·5	468	·03252	·96748	5714	186	13·23		61

[For the remainder of this T. the reader must turn to p. 246.]

HEALTHY FEMALES—(*unadjusted*).

Age.	Exposed to risk.	Died.	Ratio of 10,000.					Age.
			Prob. of Dying in a Year.	Prob. of Living a Year.	Living.	Dying.	Expec.	
0	22·5	...	...	...	...	...	55·53	0
1	48·5	...	...	...	...	...	54·53	1
2	58	...	...	...	...	...	53·53	2
3	71	2	...	...	...	...	52·53	3
4	83	...	...	...	...	...	53·04	4
5	99·5	...	...	...	...	...	52·04	5
6	120	2	...	..	...	...	51·04	6
7	139·5	...	...	...	...	...	50·90	7
8	176·5	1	...	...	...	...	49·90	8
9	208	...	..	...	...	...	49·18	9
10	241	3	·01245	·98755	10000	124	48·18	10
11	279	...	·00000	1·00000	9876	0	47·78	11
12	309	...	·00000	1·00000	9876	0	46·78	12
13	336	...	·00000	1·00000	9876	0	45·78	13
14	370·5	4	·01080	·98120	9876	107	44·78	14
15	401	5	·01247	·98753	9769	122	44·27	15
16	440·5	3	·00681	·99319	9647	66	43·82	16
17	493	1	·00203	·99797	9581	19	43·11	17
18	586	3	·00512	·99488	9562	49	42·20	18
19	723	8	·01107	·98893	9513	105	41·42	19
20	822·5	6	·00729	·98271	9408	69	40·87	20
21	862	5	·00580	·98420	9339	54	40·17	21
22	947	5	·00528	·98472	9285	49	39·40	22
23	1128	10	·00887	·98113	9236	82	38·61	23
24	1298·5	17	·01309	·98691	9154	120	37·95	24
25	1464·5	14	·00956	·99044	9034	86	37·40	25
26	1618	18	·01112	·98888	8948	100	36·80	26
27	1805·5	24	·01329	·98671	8848	117	36·21	27
28	1992	21	·01054	·98946	8731	92	35·69	28
29	2174	30	·01380	·98620	8639	120	35·07	29
30	2370	24	·01013	·98987	8519	86	34·55	30
31	2536·5	28	·01104	·98896	8433	93	33·90	31
32	2658	38	·01430	·98570	8340	119	33·27	32
33	2762	25	·00905	·99095	8221	75	32·75	33
34	2915·5	35	·01200	·98800	8146	98	32·04	34
35	3044·5	36	·01182	·98818	8048	95	31·43	35
36	3151·5	42	·01333	·98667	7953	106	30·80	36
37	3256	37	·01136	·98864	7847	89	30·21	37
38	3360·5	38	·01131	·98869	7758	88	29·55	38
39	3430	43	·01254	·98746	7670	96	28·88	39
40	3488	44	·01261	·98739	7574	95	28·24	40
41	3547	49	·01381	·98619	7479	103	27·59	41
42	3577·5	44	·01230	·98770	7376	91	26·97	42
43	3603	52	·01443	·98557	7285	105	26·30	43
44	3610	40	·01108	·98892	7180	80	25·68	44
45	3624·5	44	·01214	·98786	7100	86	24·96	45
46	3580·5	61	·01704	·98296	7014	119	24·26	46
47	3539·5	52	·01469	·98531	6895	102	23·68	47
48	3529	49	·01388	·98612	6793	94	23·02	48
49	3551	42	·01183	·98817	6699	79	22·34	49
50	3569	56	·01569	·98431	6620	104	21·60	50
51	3535·5	42	·01188	·98812	6516	78	20·94	51
52	3489·5	72	·02063	·97937	6438	132	20·18	52
53	3415·5	46	·01347	·98653	6306	85	19·60	53
54	3353·5	56	·01670	·98330	6221	104	18·86	54
55	3286	66	·02009	·97991	6117	123	18·17	55
56	3231	65	·02012	·97988	5994	121	17·53	56
57	3146·5	53	·01684	·98316	5873	99	16·88	57
58	3077	77	·02502	·97498	5774	145	16·16	58
59	2991·5	56	·01872	·98128	5630	105	15·56	59
60	2887	71	·02459	·97541	5525	136	14·85	60
61	2740·5	56	·02043	·97957	5389	110	14·21	61

[The reader will find the remainder of this T. on p. 247.]

HEALTHY MALES—(*unadjusted*)—continued from p. 244.

Age.	Exposed to risk.	Died.	Ratio of 10,000. Prob. of Dying in a Year.	Prob. of Living a Year.	Living.	Dying.	Expec.	Age.
62	13261	459	·03461	·96539	5528	191	12·66	62
63	12147·5	454	·03737	·96263	5337	200	12·09	63
64	11021·5	443	·04019	·96981	5137	206	11·54	64
65	9984·5	435	·04357	·95643	4931	215	11·01	65
66	9009·5	421	·04673	·95327	4716	220	10·49	66
67	8081	396	·04900	·95100	4496	220	9·98	67
68	7214	399	·05531	·94469	4276	237	9·46	68
69	6375·5	389	·06501	·93899	4039	246	8·99	69
70	5622	315	·05603	·94397	3793	213	8·54	70
71	4953	308	·06218	·93782	3580	222	8·02	71
72	4378	349	·07972	·92028	3358	268	7·52	72
73	3771·5	297	·07875	·92125	3090	243	7·12	73
74	3228	340	·10533	·89467	2847	300	6·69	74
75	2693	254	·09432	·90568	2547	241	6·42	75
76	2253	240	·10652	·89348	2306	245	6·03	76
77	1848·5	201	·10874	·89126	2061	224	5·69	77
78	1531	188	·12280	·87720	1837	226	5·33	78
79	1257	171	·13604	·86396	1611	219	5·00	79
80	995	140	·14070	·85930	1392	196	4·71	80
81	782	125	·15985	·84015	1196	191	4·40	81
82	609·5	105	·17227	·82773	1005	173	4·14	82
83	464	96	·20690	·79310	832	172	3·90	83
84	339	61	·17994	·82006	660	119	3·79	84
85	254·5	55	·21611	·78389	541	117	3·51	85
86	184	40	·21739	·78261	424	92	3·34	86
87	128·5	28	·21790	·78210	332	72	3·13	87
88	91·5	26	·28415	·71585	260	74	2·87	88
89	57·5	11	·19130	·80870	186	36	2·81	89
90	43·5	10	·22989	·77011	150	34	2·35	90
91	32	10	·31250	·68750	116	36	1·91	91
92	20	9	·45000	·55000	80	36	1·55	92
93	10·5	7	·66667	·33333	44	29	1·40	93
94	4	...	·00000	1·00000	15	0	2·21	94
95	3·5	1	·28571	·71429	15	5	1·21	95
96	2	2	1·00000	·00000	10	10	·50	96
97	...	...	...	...	...	...	...	97
98	...	...	...	...	...	...	...	98

This T. is compiled from the T. given at pp. 224, 273, and 281 of the vol. 1869.

merely nosological, and do not profess to give the rate of mort. To have done so on the present occasion would have involved too much labour and expense, as the number of pol. issued amount to upwards of *a million and three-quarters!* It may be advisable to state that the lives at risk represent *about an equal proportion of males and females.*" We hope some day to see the inquiry extended in the direction of our present subject. There is one T. from which we may draw a few items of interest:

IX.—*Proportional Number of Males and Females in* 1000 *deaths from the chief Orders of Disease during the* 4 *years* 1867–70.

Causes of Death.	Persons.	Males.	Females.
Zymotic Diseases	219	220	219
Constitutional Diseases ...	211	202	220
Local Diseases...	471	473	467
Developmental Diseases ..	68	56	80
Violent Deaths...	31	49	14
	1000	1000	1000

1872.—This year was pub.: *Obs. on the Rate of Mort. of Assured Lives, as experienced by Ten Assu. Cos. in Scotland, from* 1815 *to* 1863, by Mr. James Meikle, Act., Edin. The data here dealt with extended over 94,749 lives, viz. 82,334 males (of whom there had died 10,646); 8864 females (of whom there had died 1301); and 3551 males and females ins. at extra rates, of whom we have already treated under DISEASED LIVES, INS. OF. The whole of these lives had constituted part of the data on which *Exp.* T. No. 2 was founded, but were

HEALTHY FEMALES—(*unadjusted*)—continued from page 245.

Age.	Exposed to risk.	Died.	Ratio of 10,000.					Age.
			Prob. of Dying in a Year.	Prob. of Living a Year.	Living.	Dying.	Expec.	
62	2627	82	·03121	·96597	5279	165	13·50	62
63	2464·5	88	·03571	·96429	5114	183	12·92	63
64	2309·5	76	·03291	·96709	4931	162	12·38	64
65	2178·5	85	·03902	·96098	4769	186	11·78	65
66	2028·5	71	·03500	·96500	4583	160	11·24	66
67	1886·5	84	·04453	·95547	4423	197	10·63	67
68	1733	86	·04962	·95038	4226	210	10·10	68
69	1555·5	84	·05400	·94600	4016	217	9·60	69
70	1411·5	76	·05384	·94616	3799	204	9·12	70
71	1297·5	72	·05549	·94451	3595	200	8·61	71
72	1173·5	72	·06135	·93865	3395	208	8·09	72
73	1046·5	93	·08887	·91113	3187	283	7·58	73
74	915·5	87	·09503	·90497	2904	276	7·27	74
75	795	66	·08302	·91698	2628	219	6·99	75
76	694	73	·10519	·89481	2409	253	6·57	76
77	590	58	·09831	·90169	2156	212	6·29	77
78	507·5	75	·14778	·85222	1944	287	5·92	78
79	396	46	·11616	·88384	1657	193	5·86	79
80	327	35	·10703	·89297	1464	156	5·56	80
81	274	37	·13504	·86496	1308	177	5·17	81
82	227	21	·09251	·90749	1131	105	4·90	82
83	193	25	·12953	·87047	1026	133	4·35	83
84	154·5	29	·18770	·81230	893	167	3·92	84
85	122	27	·22131	·77869	726	161	3·71	85
86	86	19	·22093	·77907	565	125	3·62	86
87	61·5	14	·22764	·77236	440	100	3·51	87
88	39	8	·20513	·79487	340	70	3·40	88
89	29	9	·31034	·68966	270	84	3·14	89
90	17	6	·35294	·64706	186	65	3·33	90
91	10	2	·20000	·80000	121	25	3·88	91
92	8·5	2	·23529	·76471	96	22	3·72	92
93	7	1	·14286	·85714	74	11	3·71	93
94	6	...	·00000	1·00000	63	0	3·25	94
95	6	...	·00000	1·00000	63	0	2·25	95
96	6	3	·50000	·50000	63	31	1·25	96
97	2	1	·50000	·50000	32	16	1·00	97
98	1	1	1·00000	·00000	16	16	·50	98

This T. is compiled from the T. at pp. 245, 275, and 281, of the vol. 1869.

again submitted to distinct obs. in the preparation of Mr. Meikle's Rep. We propose to notice the results briefly. Mr. Meikle says:

> The law of mort. prevailing among females of the pop. has on several occasions been ascertained to exhibit a different character from that of males of the pop. That a similar difference exists between the mort. of assured males and assured females has been shown from the statistics of the 17 offices [*Exp.* T. No. 1], and it is now demonstrated that a similar difference exists between the males and females assured in the 10 Scottish Assu. Cos. The results are now given in such a form as to afford the means of a comparison with each other.

Before coming directly to the results of his own investigation, he passes in brief review the comparative results of male and female mort. according to (1) the *English* T. No. 3, and (2) the *Experience* T. No. 1. Thus, by the former, out of equal numbers in existence at age 10, a large number of males remain in existence up to about age 45; while thereafter the number of females is greater. On looking at the deaths in each quinquennium, more females die up to age 40; from thence to 70 more males; and then again to the end of life female deaths are more numerous. By *Experience* T. No. 1, he says "it will be seen that a law of mort., nearly similar to that of the *English* Life T. derived from the pop. and deaths during 17 years, was ascertained to exist from the investigation of male and female assured lives:" more females died up to age 40, thereafter to age 75 more males; and finally more females died. He demonstrates that the difference between the mort. of males and females is much greater in insured life records, than among the general pop. "It is also greater in the case of the Actuaries' Experience than in that of the ten Scottish offices." "In the two assured life records, the greater mort. of female life is continued to an older age than in the pop."—the turning-point in the one being about age 45, and in the other about age 40. "This may perhaps be owing to the circumstance that a larger proportion would be married in the assu. females than in the pop."

According to the exp. of ten Scottish Ins. Offices, assuming a radix of 100,000 alive at age 10, the following :

Ages.	Remain alive at end of each 5 Years.				Die in each Quinquennial Period.				Ages.
	Males.	Females.	Difference.		Males.	Females.	Difference.		
			Males greater.	Males less.			Males greater.	Males less.	
10	100,000	100,000	...	...	2,172	1,372	800	1,426	10—14
15	97,828	98,628	...	800	1,872	3,298	...	1,281	15—19
20	95,956	95,330	626	...	3,193	4,474	...	1,275	20—24
25	92,763	90,856	1,907	...	3,249	4,524	...	976	25—29
30	89,514	86,332	3,182	...	3,572	4,548	...	1,002	30—34
35	85,942	81,784	4,158	...	4,098	5,100	...	300	35—39
40	81,844	76,684	5,160	...	4,328	4,628	...	...	40—44
45	77,516	72,056	5,460	...	5,104	4,660	444	...	45—49
50	72,412	67,396	5,016	...	5,950	4,777	1,173	...	50—54
55	66,462	62,619	3,843	...	7,469	5,491	1,978	...	55—59
60	58,993	57,128	1,865	...	9,401	7,238	2,163	...	60—64
65	49,592	49,890	...	298	11,184	9,802	1,382	...	65—69
70	38,408	40,088	...	1,680	12,898	11,761	1,137	...	70—74
75	25,510	28,327	...	2,817	11,092	11,347	...	255	75—79
80	14,418	16,980	...	2,562	9,048	9,831	..	783	80—84
85	5,370	7,149	...	1,779	3,685	6,129	...	2,444	85—89
90	1,685	1,020	665	...	1,357	1,020	337	...	90—94
95	328	0	328	...	328	0	328	...	95—

Out of equal numbers of males and females alive at age 10, it is here shown that a larger number of females die up to age 45. Thereafter the males suffer the greater mort. This law however is more accurately represented by a comparison of the numbers dying in one year out of 10,000 lives of each sex alive at the beginning of each year. For abbreviation, this representation may be grouped in quinquennial periods, by a comparison of the sum of the rates of mort. of each sex during periods of 5 years, as in several of the illustrations given of the mort. of male lives. From the three views given, it might be inferred that the rate of mort. of females in the later years of life—70 and upwards—was greater than the rate for males. This is not shown. A greater number of females die because the number out of whom they die is greater than the number out of whom the males die. If, however, equal numbers of each sex be alive at the beginning of the year, the deaths in that year will correctly show the relative intensities of the rates of mort. This is given in the following T. :

Ages.	Scottish Offices' T.			
	Males.	Females.	Difference.	
			Males greater.	Males less.
10-14	219	138	81	
15-19	193	338	...	145
20-24	337	478	...	141
25-29	355	508	...	153
30-34	406	536	...	130
35-39	486	640	...	154
40-44	540	618	...	78
45-49	676	664	12	...
50-54	850	730	120	...
55-59	1,178	909	269	...
60-64	1,706	1,336	370	...
65-69	2,491	2,139	352	...
70-74	3,911	3,351	560	...
75-79	5,582	4,835	747	...
80-84	8,911	7,863	1048	...
85-89	10,210	15,224	...	5014
90-94				
95-				

The difference between the laws of mort. of male and female life ascertained from other trustworthy statistics is here seen to exist in the experience of the Scottish Offices.

It remains to add that the 8864 healthy females furnished for obs. 71,152 years of life. The number who died, as already shown, was 1301. The average age at entry was 37·834. The average duration 8·027 ; and the average rate of mort. = ·018285. The actual deaths were $94^{4}/_{10}$ p.c. of the *Carlisle* T.; and $92^{8}/_{10}$ of the *Experience* T. No. 1.

At the census of *Bombay*, 1872, the pop. was found to be 644,405 : of these 399,716 were males, 244,689 females—the males to each 100 females being in the proportion of 163·35. In 1864, the previous census, the males had been found in the proportion of 185·39 to every 100 females.

1873.—We have noticed incidentally in the course of this art. the differing proportions of the sexes affected by fever and other diseases. Dr. Murchison, in the 2nd ed. of his *Treatise on the Continued Fevers of*

Gt. Brit., specifically deals with this question, in regard to typhus fever. He distinctly says: "Sex in itself does not predispose to typhus." He shows that out of 18,268 cases of typhus admitted into the London Fever Hospital during 23 years, the females only exceeded the males by 376. Of 5379 cases noted at Glasgow during 5 years, 2554 were males, and 2825 were females; and of 2492 cases at Dundee, 1142 were males, and 1350 females. "The excess of females, however, is more than accounted for by the preponderance of that sex in the pop." He adds:

> The statement that sex itself does not predispose to typhus holds good in regard to the other continued fevers, although opinions of an opposite nature, and yet often contradictory, have been expressed. The varying results at different times and places are no doubt owing to a preponderance of one sex in the pop., or to local and accidental circumstances, which expose one sex more than the other to the exciting causes of fever, or which influence the admission into hospital of one sex in preference to the other. Taking all forms of continued fever together admitted into the Lond. Fever Hospital during 23 years (1848-70), there has been a remarkable equality of the sexes: 14,255 have been males, and 14,348 females.

1874.—There was pub. Mr. C. Ansell, jun.'s *Statistics of Families in the Upper and Professional Classes*, and therein is contained a chap. on the "mort. among males and females separately," from which we draw the following: It is observable that at every age the aggregate mort. from birth up to such age is greater among males than among females, or, in other words, out of the same number of each sex born alive, fewer males than females survive to any given age.

Before proceeding with the results of Mr. Ansell's investigation, it may be useful to glance at the data which he had at his command; these were returns voluntarily supplied (under circumstances not calculated to throw any doubt on its authenticity, but perhaps the contrary) relating to 49,099 children, of whom there were born alive 24,640 males, and 23,400 females; born dead 627 males, and 432 females. From this data Mr. Ansell has deduced a series of results of the utmost value. These have been already quoted in our art. FAMILY; and a complete history of the investigation will be given under MORT. OBS. It will be remembered that several Mort. T. which have achieved great repute have been based upon much smaller numbers; as the *Northampton* T., where the pop. at no period of the 46 years under investigation exceeded 6000; or the *Carlisle* T., where the pop. during the 8 years observed upon averaged about 8000. Hence one great element of confidence in Mr. Ansell's deductions.

Diagram D (there given) shows the numbers of males and females respectively living at each age up to 60, out of which one death would take place in one year, according to the same T. that diagram C refers to (given later), and it thus illustrates the relative rates of mort. of the two sexes at different periods of life. Here both the male and female curves exhibit features the same in the main as are observable in diagram B, which relates to the two sexes combined, viz. a rapid decrease in the rate of mort. from birth up to an age varying in the different curves from 10 to 13 years; next a nearly equally rapid increase for a few years, terminating in both the male curves, and in the *English* Life female curve, at age 20; and then a sudden change to a much slower and tolerably uniform rate of increase.

Comparing the mort. of the two sexes as shown by this *upper class* experience, it will be seen that with the exception of a short interval at about age 2, the female mort. is less than that among males from birth up to 10 years of age; that from then up to age 17 the male is considerably less than the female mort., and that after the last-mentioned age the mort. among females is materially lower than among males.

In the period of life between age 18, when adolescence may be considered to be established, and age 50, by which time the physical powers have generally begun to show symptoms of decline, there die of those alive at the commencement of the period, according to the *upper class* experience, 21·30 p.c. of the females, and 28·17 p.c. of the males, being in the proportion of 1000 to 1323. By the *English* T. [*which*, is not defined], the per-centages were 30·85 females to 31·10 males, or in the proportion of 1000 to 1008.

Mr. Ansell considers that the great difference between the two T. here exhibited is prob. traceable to women in the upper classes living under conditions more favourable to health than the men do, while in the lower classes that is not the case; and he says in support:

> In the upper and professional classes it is upon the men that the wearing toil and anxieties of life chiefly press, the women enjoying a comparative exemption from them. In the present age, when so many are striving to be foremost in the race of life, the husband is frequently, or it may be constantly, engaged in an arduous struggle to maintain or improve his position, and whether successful or unsuccessful, he in too many instances injures his health in the effort. Unless, however, he be exceptionally unfortunate, and at the same time have no friends to fall back upon, his wife and family will prob. still be sufficiently supplied with the bare physical necessities for healthy existence. With the labouring classes the case is very different. Among them the mental anxieties of obtaining a livelihood are rarely great enough to produce injurious results; but if the husband's wages are insufficient, the consequent physical privations tell upon the health of his family, his wife included—at least as much as, and prob. more than, upon his own.

There are observable in the *Upper Class* female curve two striking deflections, one at about age 33, and the other at about age 43, indicating decided diminutions in the rate of mort. for a few years at those periods of life. There are not any distinct traces of such deflections in the male curve, nor in the *English* Life curves male or female; but they appear, though in a minor degree, and not precisely at the same ages, both in the *Carlisle* Table (which includes males and females) and in the females of the *Peerage Families* expectation.

In the *Upper Class* female curve the deflections alluded to are "too strongly marked to admit of the supposition that they are accidental, or are attributable to the obs. not extending over numbers sufficiently large to insure an approximately correct average;" and it may therefore be considered as at least highly prob. that among females in the upper classes the rate of mort., instead of constantly increasing after the period of childhood, as it does among males, experiences some diminution for a few years after ages 29 and 40 respectively, as compared with what it is immediately antecedent to those ages. Here is the T. referred to:

T 3.—*Mort. of* MALES *and* FEMALES *Separately.—Upper Class Exp.*

Age.	Numbers that Survive each Age out of 100,000 Born Alive.		Age.	Numbers that Survive each Age out of 100,000 Born Alive.	
	Males.	Females.		Males.	Females.
Total Births	102,545	101,846	33	70,891	74,342
Born Alive	100,000	100,000	34	70,225	73,846
·02	98,060	98,718	35	69,478	73,397
·10	96,504	97,537	36	68,833	72,880
·50	93,520	95,088	37	68,080	72,342
1·00	91,032	92,927	38	67,427	71,677
1·50	89,539	91,589	39	66,659	71,024
2	88,860	90,729	40	66,039	70,424
3	87,786	89,774	41	65,294	69,840
4	86,972	88,927	42	64,747	69,166
5	86,283	88,311	43	63,855	68,507
6	85,628	87,782	44	63,237	67,950
7	85,060	87,246	45	62,556	67,700
8	84,630	86,789	46	61,660	67,194
9	84,268	86,455	47	60,972	66,621
10	83,927	86,196	48	60,160	66,118
11	83,599	85,871	49	59,273	65,566
12	83,336	85,509	50	58,351	65,070
13	83,056	85,156	51	57,575	64,286
14	82,774	84,777	52	56,477	63,775
15	82,440	84,395	53	55,805	63,002
16	82,103	83,881	54	55,205	62,358
17	81,698	83,236	55	54,592	61,802
18	81,240	82,678	56	53,548	60,925
19	80,650	82,138	57	52,795	60,089
20	79,956	81,536	58	51,452	59,515
21	79,267	81,075	59	50,618	58,671
22	78,553	80,559	60	49,563	57,413
23	77,762	79,991	61	48,503	56,409
24	77,107	79,437	62	46,926	55,477
25	76,374	78,882	63	45,836	54,569
26	75,674	78,235	64	44,832	53,206
27	74,991	77,726	65	42,977	51,924
28	74,342	77,157	66	41,425	50,922
29	73,739	76,560	67	39,878	49,796
30	72,922	75,941	68	38,604	48,746
31	72,176	75,307	69	37,183	47,697
32	71,590	74,818	70	35,744	46,195

More detailed inquiries in connexion with the construction of this T. showed that in the same day of birth the deaths amounted in the case of males to as much as 10 p.c. of the first year's mort.; while in the case of females it was but 8⅓ p.c. Other distinctions of this character were remarked in the earlier periods of life; all of which will be spoken of under INFANT MORT.

In another chap. Mr. Ansell enters upon the question of the relative proportions of males and females living at different periods of life; and in elucidation gives the T. which follows. In cols. **A** and **B** are given the respective numbers that survive each year of age from birth up to 75, according to the *Upper Class* (adjusted) *Experience*: the starting numbers of 105,299 males and 100,000 females expressing the relative proportions of each, born alive, according to the data before him. Col. **C** shows the number of males living at any age to every 1000 females living at the same age.

T. 7.—*Relative Proportions of* MALES *and* FEMALES *Living at Different Ages.*

“UPPER CLASS” EXPERIENCE.

Age.	Numbers Alive at each Age.		Number of Males to 1000 Females.	Age.	Numbers Alive at each Age.		Number of Males to 1000 Females.
	Males.	Females.			Males.	Females.	
	A	B	C		A	B	C
0	105,299	100,000	1053	38	70,897	71,626	990
1	95,856	92,927	1032	39	70,166	71,021	988
2	93,569	90,729	1031	40	69,435	70,410	986
3	92,561	89,862	1030	41	68,705	69,805	984
4	91,740	89,120	1029	42	67,964	69,217	982
5	91,001	88,469	1029	43	67,216	68,654	979
6	90,337	87,892	1028	44	66,451	68,118	975
7	89,773	87,393	1027	45	65,667	67,603	971
8	89,273	86,946	1027	46	64,858	67,095	967
9	88,838	86,551	1026	47	64,023	66,580	962
10	88,448	86,182	1026	48	63,162	66,047	956
11	88,094	85,826	1026	49	62,280	65,489	951
12	87,762	85,466	1027	50	61,396	64,902	946
13	87,433	85,087	1028	51	60,518	64,289	941
14	87,094	84,676	1029	52	59,658	63,651	937
15	86,729	84,226	1030	53	58,811	62,990	934
16	86,320	83,738	1031	54	57,965	62,307	930
17	85,840	83,220	1031	55	57,093	61,597	927
18	85,297	82,684	1032	56	56,180	60,850	923
19	84,688	82,139	1031	57	55,203	60,060	919
20	84,021	81,594	1030	58	54,163	59,222	915
21	83,310	81,050	1028	59	53,057	58,328	910
22	82,584	80,505	1026	60	51,895	57,376	904
23	81,844	79,956	1024	61	50,664	56,372	899
24	81,100	79,940	1021	62	49,363	55,326	892
25	80,362	78,836	1019	63	47,994	54,242	885
26	79,630	78,265	1017	64	46,560	53,133	876
27	78,904	77,688	1016	65	45,070	52,009	867
28	78,179	77,110	1014	66	43,531	50,868	856
29	77,445	76,533	1012	67	41,948	49,688	844
30	76,728	75,964	1010	68	40,325	48,429	833
31	76,002	75,409	1008	69	38,660	47,026	822
32	75,276	74,873	1005	70	36,938	45,412	813
33	74,552	74,350	1003	71	35,171	43,539	808
34	73,824	73,833	1000	72	33,368	41,409	806
35	73,095	73,311	997	73	31,537	39,106	806
36	72,363	72,773	994	74	29,671	36,765	807
37	71,631	72,212	992	75	27,844	34,532	806

By the *Upper Class* Experience it is seen that 1053 males are born to each 1000 females. The preponderance of males diminishes as the age advances; and at age 34 the numbers of the two sexes have become equal. After those ages the diminution in the proportion of males still goes on: so that at age 70 there are only 813 males to 1000 females living.

The relative numbers of males to females born in the different countries of Europe is viewed, upon data similar to that which we have given under BIRTHS; and the following observations are offered:

> An excess in number of male over female births would therefore appear to prevail generally, at all events among European races. Whether, however, it arises from the operation of any undeviating natural law, ordained it may be to compensate for the greater tenderness of the male constitution in infancy; or whether it is due simply to extraneous influences, and, if so, what those influences are, are questions too wide to be here discussed.

The next point is one of great interest: “Relations of a distinct character may, however, be traced *between the proportions of the sexes and the size of families*, and also the position of children as regards the numerical order of their birth.” Mr. Ansell says hereon:

> On arranging all the families included in the data in three classes, the 1st consisting of families with 5 or any lesser number of children, the 2nd of families with from 6 to 10 children, and the 3rd of families with 11 or more children, the ratio of male to female births, including still-born, is found to be:
>
> In the 1st class, as .... 1033 to 1000
> In the 2nd class, as .... 1075 ,, 1000
> And in the 3rd class, as .... 1083 ,, 1000

On aranging the children in the order of their birth, the ratios are
For 1st, 2nd, and 3rd children as .... 1066 to 1000
For 4th, 5th, and 6th children as .... 1055 „ 1000
And for 7th and younger children as .... 1052 „ 1000

Hence it appears (1) that the proportion of males is greater in large than in small families; and (2) that it is greater among the earlier than among the later born children.

In the *Review Almanack*, 1874, p. 124, is a T. of the rates charged by various Brit. offices for immediate life annu. on male and female lives respectively.

At the Southern Ins. Convention of the U.S., held 1874, the question of the desirability or non-desirability of female lives for insurance was discussed, and was ultimately referred to the Committee on Mortuary Statistics, for more extended investigations; and then to report. Prof. E. B. Smith showed considerable insight into the moral aspect of the case in his remark: "At the ages with which the companies have chiefly to do, women are insured most commonly for the benefit of parties who have really no pecuniary interest in the prolongation of the life insured; but who, on the contrary, have a double interest in its early expiration—release from an annual tax, and the acquisition of a certain sum."

1875.—Mr. C. Walford read a paper before the Inst. of Act. on *Female as Contrasted with Male Lives*, which in fact was but a brief outline of some of the more important facts embodied in this paper. The discussion which followed, and which was fully reported in the cols. of the *Ins. Record*, 26 Feb. 1875, elicited many points of practical interest.

The man. of the associated life offices in Scotland resolved to recommend to their respective cos. to charge 5*s*. p. £100 ins. on all female lives under 50; but that this charge should be discontinued after that age.

In vol. xviii. of *Assu. Mag.* is a paper by Mr. J. J. McLauchlan, A.F.A., *On the Rate of Mort. among Adult Gov. Emigrants on the Voyage to Australia, during the Years* 1847–1861 *inclusive, as determined from the Reports of the Emigration Commissioners*, wherein two features prominently appear. 1. That the extra risk incurred by Gov. emigrants on the voyage to Australia is caused not so much by the danger of wreck, as by the greater intensity with which the causes ordinarily producing mort. act on a sea voyage. 2. That the extra risk attaching to the voyage is much greater for women than for men—"a result that was quite to be anticipated." While 8*s*. 6*d*. p.c. would cover the "extra," or voyage prem. for males, 12*s*. 6*d*. is required for females.

The following T. drawn from the Rep. of the Reg.-Gen., showing the ann. rates of mort. per 1000 of males and females at different ages in each of the 34 years 1838–71, will be useful for reference:—

Years.	Males.—Deaths to 1000 Living.												
	Ages—Males.												
	All Ages.	0-	5-	10-	15-	25-	35-	45-	55-	65-	75-	85-	95 and upwds.
1838	23·4	70·1	9·0	5·2	8·5	10·8	13·6	19·5	34·1	70·5	148·1	298·7	457·0
1839	22·8	71·5	9·0	5·1	8·2	9·9	12·7	18·0	31·9	65·0	139·1	280·0	396·9
1840	23·7	75·3	10·8	5·4	8·3	10·0	12·7	18·0	31·4	67·2	145·0	302·8	447·5
1841	22·4	68·4	9·6	5·1	8·1	9·8	12·2	17·9	31·4	64·8	142·7	296·5	431·6
1842	22·4	70·6	9·0	5·0	7·8	9·3	11·9	17·3	30·4	65·7	145·7	294·1	431·4
1843	22·0	69·1	8·5	4·8	7·7	9·2	12·1	17·2	30·1	65·3	140·7	287·1	426·5
1844	22·4	70·0	9·0	4·7	7·6	9·3	12·2	17·5	30·5	66·7	146·2	316·4	405·9
1845	21·7	66·8	8·2	4·7	7·8	9·2	11·9	17·2	29·7	64·1	143·7	301·1	463·4
1846	23·9	77·8	8·3	5·1	8·6	10·2	12·6	18·0	31·3	66·7	150·3	321·3	491·7
1847	25·4	76·1	9·7	5·5	9·3	10·9	14·3	20·7	36·5	76·0	172·8	354·6	543·3
1848	23·9	74·2	10·4	5·3	8·6	10·2	13·0	18·7	32·7	67·2	149·5	305·5	411·0
1849	25·8	75·3	11·3	6·5	9·5	2·4	15·7	22·6	36·5	71·9	151·6	299·3	419·2
1850	21·4	67·0	8·2	4·7	7·2	8·8	11·6	17·2	29·8	62·8	140·1	285·3	381·2
1851	22·8	73·0	8·7	4·9	7·8	9·5	12·4	17·9	30·3	64·0	140·6	282·5	419·4
1852	23·2	75·0	9·	5·2	8·0	9·7	12·3	18·1	30·6	62·9	142·0	286·6	445·4
1853	23·8	73·3	8·5	5·1	8·	10·2	13·2	19·4	32·4	69·2	159·7	321·0	497·3
1854	24·4	77·7	9·4	5·6	8·4	10·4	13·6	19·3	31·7	66·8	149·1	290·9	414·3
1855	23·5	71·9	8·2	5·0	7·8	9·7	12·9	18·5	32·6	71·3	162·8	344·2	471·8
1856	21·4	67·5	7·2	4·6	7·4	9·0	11·9	16·4	28·8	61·6	131·0	280·9	367·0
1857	22·6	72·5	7·8	4·7	7·4	9·2	12·2	17·0	29·5	64·6	143·8	302·3	403·7
1858	23·9	76·8	10·5	5·0	7·7	9·3	12·5	17·3	30·5	68·0	147·0	317·7	477·3
1859	23·3	75·0	9·3	4·8	7·4	9·2	12·6	17·4	30·2	66·4	140·2	293·8	437·5
1860	22·2	67·6	6·8	4·1	7·	9·1	12·7	17·3	30·9	70·4	151·6	311·3	437·3
1861	22·7	71·8	6·7	4·3	7·3	9·2	12·7	16·9	30·1	68·9	146·5	310·9	448·4
1862	22·4	69·7	7·6	4·4	7·2	9·2	12·7	18·1	31·3	62·5	139·5	295·5	387·2
1863	24·1	77·8	10·	5·0	7·4	9·4	13·0	18·2	31·7	63·3	139·2	304·7	500·0
1864	24·9	75·9	9·8	4·9	7·8	10·3	14·5	20·1	35·3	70·0	151·6	329·8	526·7
1865	24·5	75·0	8·1	4·7	7·7	10·6	14·2	20·5	34·7	68·3	151·6	321·3	463·3
1866	24·6	74·9	7·8	4·6	7·8	10·9	14·7	20·9	34·6	68·8	150·4	319·0	448·0
1867	23·0	69·3	6·5	4·0	7·1	10·0	13·5	19·1	33·5	68·5	152·4	326·8	474·3
1868	23·1	73·0	7·8	4·2	6·9	9·7	13·1	19·0	32·0	64·3	139·5	278·2	392·9
1869	23·6	2·6	8·3	4·3	6·7	9·9	13·3	19·4	33·	69·0	149·2	305·1	361·6
1870	24·2	75·0	9·0	4·6	6·9	10·1	13·6	19·6	33·9	70·4	152·2	314·9	418·1
1871	23·9	71·7	8·3	4·4	7·7	11·1	14·4	20·0	33·9	67·4	145·1	306·1	497·7
Mean of 34 Years (1838-71).	23·3	72·6	8·7	4·9	7·8	9·9	13·0	18·5	32·0	67·1	147·1	305·5	441·1

Years.	Females—Deaths to 1000 Living.												
	Ages.—Females.												
	All Ages.	0-	5-	10-	15-	25-	35-	45-	55-	65-	75-	85-	95 and upwds.
1838	21·5	60·1	9·0	5·4	8·5	10·4	13·2	16·8	30·4	58·8	135·2	266·0	370·8
1839	21·0	61·1	9·4	5·3	8·5	10·1	12·5	15·6	27·6	55·3	126·6	253·2	364·0
1840	22·0	64·2	11·1	5·7	8·7	10·3	12·7	15·7	28·5	58·9	136·1	284·4	425·6
1841	20·8	58·6	9·6	5·2	8·4	10·1	12·3	15·4	27·4	58·4	133·8	282·6	427·1
1842	21·0	60·3	9·2	5·1	8·3	10·1	12·2	15·2	27·3	60·2	130·3	284·1	402·2
1843	20·5	59·1	8·5	4·9	7·9	9·8	12·3	14·8	26·7	58·9	129·4	276·0	442·2
1844	20·8	59·1	9·0	5·0	8·1	10·1	12·0	15·2	27·4	60·8	133·7	283·6	426·2
1845	20·1	56·8	8·0	4·8	8·2	9·8	11·9	14·6	26·4	58·8	120·0	274·8	404·7
1846	22·2	67·0	8·1	5·4	8·7	10·5	12·4	15·5	27·5	61·9	136·4	302·5	506·3
1847	23·8	65·8	9·5	5·8	9·2	11·8	14·2	17·8	31·9	70·0	157·7	320·0	520·0
1848	22·2	64·2	10·0	5·7	8·8	10·9	13·0	15·8	28·3	61·0	134·8	275·5	460·3
1849	24·5	65·1	11·0	6·6	10·0	13·5	16·1	19·9	33·3	66·2	139·3	279·7	428·6
1850	20·1	57·5	8·1	4·9	7·8	9·9	11·7	14·7	26·1	57·3	126·3	258·9	427·1
1851	21·2	63·0	8·6	5·3	8·2	10·1	11·9	15·2	26·8	58·5	128·2	263·6	450·2
1852	21·6	64·4	8·8	5·4	8·4	10·3	12·1	15·1	26·5	56·6	131·6	276·2	413·5
1853	22·0	63·4	8·1	5·4	8·7	10·6	12·4	15·8	28·3	60·2	140·7	293·5	472·1
1854	22·7	67·8	9·2	5·6	8·7	11·0	13·1	16·4	28·3	58·1	133·0	269·5	421·6
1855	21·7	61·6	8·0	5·0	8·3	10·0	12·4	15·4	29·3	61·5	147·6	315·2	443·0
1856	19·7	58·9	7·3	4·6	7·6	9·3	11·3	14·0	25·1	51·2	119·8	242·7	366·9
1857	21·1	63·8	7·7	4·7	7·9	9·4	11·5	14·6	27·1	55·8	131·2	281·4	454·5
1858	22·3	67·5	10·4	5·4	8·2	9·8	11·9	14·8	27·6	57·3	137·8	297·0	458·5
1859	21·6	65·2	9·4	5·3	7·9	9·7	11·7	15·1	27·0	53·9	129·2	276·4	404·6
1860	20·3	57·5	6·9	4·4	7·5	9·4	11·5	15·0	28·6	56·3	136·5	297·1	396·9
1861	20·6	62·0	6·8	4·4	7·8	9·3	11·2	14·7	28·2	52·5	131·2	266·1	444·8
1862	20·5	60·1	7·3	4·5	7·4	9·5	11·8	14·7	26·7	57·2	129·0	268·6	420·2
1863	21·9	67·4	9·8	5·2	7·5	9·7	12·1	14·8	26·9	56·3	129·3	282·9	455·0
1864	22·6	65·8	9·4	5·1	7·7	10·3	12·7	16·4	29·7	63·2	141·6	295·8	462·9
1865	22·0	65·1	7·8	4·6	7·7	10·2	12·7	16·5	28·7	60·3	138·5	287·2	496·4
1866	22·2	65·6	7·2	4·5	7·7	10·5	13·2	16·9	29·3	61·3	139·7	289·4	424·1
1867	20·5	59·7	6·1	3·9	7·1	9·5	11·9	15·6	27·6	59·6	139·2	279·5	441·1
1868	20·7	64·1	7·4	4·2	7·0	9·4	11·5	15·0	26·5	55·3	126·0	255·9	380·7
1869	21·0	63·2	7·8	4·3	6·6	9·2	11·6	15·8	27·7	59·6	135·1	270·6	394·9
1870	21·6	64·4	8·4	4·5	6·9	9·5	11·8	15·9	29·0	61·1	139·8	283·1	415·1
1871	21·3	62·4	7·5	4·5	7·4	9·7	12·3	15·9	28·5	60·4	133·6	269·8	412·5
Mean of 34 Years (1838-71).	21·5	62·7	8·5	5·0	8·0	10·1	12·3	15·6	28·0	58·9	134·3	279·5	430·4

Note.—The rates in the later years of these T. are corrected in the light of the Census of 1871, and therefore differ in some small degree from other rates for the same year quoted in other parts of this work.

T. showing the number of Males and Females in the different States of Europe, and the proportion of the latter to the former.

Country.	Date of last Census.	Population.		Females per 1000 Males.
		Males.	Females.	
United Kingdom	1871	15,549,271	16,267,837	1046
Austria	1869	10,006,350	10,413,691	1035
Russia	1863	30,082,790	30,826,519	1025
Germany, N.	1867	14,791,000	15,114,000	1022
Portugal	1864	2,005,540	2,182,870	1088
Sweden	1867	860,697	917,699	1066
Switzerland	1865	835,947	865,809	1036
Denmark	1870	879,558	904,007	1028
Spain	1860	7,765,508	7,907,973	1018
Holland	1869	1,812,550	1,836,520	1015
France*	1866	19,014,079	19,052,985	1002
Italy	1868	12,726,688	12,678,035	996
Belgium	1866	2,422,334	2,406,986	994
Greece	1861	689,747	635,732	921

* These figures have reference to the state of France on 1st July, 1870.

The supposed influence of *marriage* on the longevity of females will be considered under MARRIAGE; INFLUENCE OF, ON LONGEVITY. The effect of *occupation* on the sexes will be considered under OCCUPATION, INFLUENCE OF. The relative effects of town and country life upon the sexes will be discussed under TOWN LIFE, INFLUENCE OF. [BIRTHS.] [CONSUMPTION.] [DEATHS.] [DISEASED LIVES.] [FEMALES.] [FECUNDITY.] [MARRIAGES.] [MORT., LAW OF.] [POPULATION.] [SICKNESS.] [WIDOWS FUNDS.]

FEMALE Provident Assu. Co., "for securing an Independence to Unmarried Women."—Founded in 1855, with a proposed cap. of £50,000, in 5000 shares of £10, of which only 3000 were at first to be issued. The prosp. said: "The security which the Co. offers for the fulfilment of its engagements is probably altogether an unexampled guarantee. That security will depend, not on unpaid share cap., or on the solvency of a fluctuating list of shareholders, but on the Co. always having, in cash and available investments, a realized fund *exceeding* the amount requisite to satisfy all their immediate and prospective liabilities. The Co. is thus most favourably distinguished as affording a perfect guarantee."

The first steps were taken by the promoters in 1854, in the pub. of a "Private and Confidential" pamph.: *Statement of the Promoters of the Female Prov. Asso., a self-supporting Inst. for securing, by the application of the principle of Assu. to the double contingency of Death and Marriage, a provision for Unmarried Females in their old age, with a certain Payment in the event of Marriage;* from which we may see in some detail the views of the founders. They say:

> There is no class in society among whom so much privation exists as among women who have attained these ages (40, 45, and 50) without having been married. Many brought up in the comfort, and frequently the luxury of their parents' homes, pass the early years of womanhood in the sure expectation of marriage, and without a thought of making any provision for their old age; and it often occurs that on their father's death they learn for the first time that no adequate provision has been made for them, and that . . . . they have to provide not only for immediate necessities, but also for the wants of that approaching period when they will be unequal to labour. At other times, when misfortune overtakes the father, he has, in addition to his own troubles, to reproach himself for not having secured some provision for his unmarried daughters, beyond the charity of friends, or the protection of the union.
>
> Life ins. is frequently resorted to, and it is undoubtedly of immense value; but it is beyond the power of a father whose income ranges from £200 to £500 p.a. (and what a vast class does this represent!) to pay the heavy prems. necessary to provide even a trifle at his death for each member of his family; and even when his circumstances permit so large a sacrifice of ann. income, he cannot, by ins. his life, attain a certain and sufficient provision for the old age of his daughters. . . .
>
> Until the present asso. was projected, it appears to have escaped obs. that most of the privation and some of the destitution referred to might be prevented by the application of a principle well understood by commercial men, and already applied to provide against some of the contingencies of fortune. And the object of the *Female Prov. Asso.*—an independent and self-supporting inst.—is to apply this principle—the principle of assu.—*to the double contingency of death and marriage;* and by making for the first time both these events, as well as the accumulations upon the contributions of the asso. at compound int., a source of profit, to secure to the survivors who remain single a certain and sufficient provision for their old age.

The proposed operations of the asso. are then set out. They extended over 10 classes corresponding to 10 periods of 5 years between birth and age 50. The asso. would receive from or on behalf of females contributions to any of these classes, such contributions to be at a rate of not less than £1, nor more than £25 p.a., and to be made yearly during the continuance of the class, that is, for a period of 5 consecutive years. Every contribution to a class being completed will entitle the female by whom or on whose behalf it has been made, to a provision payable at her own option at 40, 45, or 50 years of age, provided she be then single. The amount of this provision will vary, of course, according to the ann. amounts contributed, the class to which contribution has been made, and the periods of life at which the parties may choose to demand payment from the asso. The T. given at the end of this article on the next page will illustrate the working of the scheme:

There was a similar T. under which the amount of all prems. paid should be returnable at marriage—the rates being in a corresponding degree increased. There were also some further T. by which provision could be secured to all the daughters of a marriage, by a single prem. paid within 2 months after marriage. This part of the scheme we shall examine under Marriage Ins. The following para. bring out other points of practical value:

> Even without reference to the application of the principle to a new contingency, the plan of the Asso. supplies a great want, and presents many advantages over the existing forms of ins. Thus it affords to persons in ill-health, officers in the military, naval, Indian, and Colonial services, emigrants and merchants residing abroad, whose lives are uninsurable, or insurable only at a heavy prem., a means of providing for female children or relatives; and by insuring a distinct provision for contributions to a single class of the Asso., none of such classes extending over a longer period than 5 years, it avoids the occurrence of a disaster that has been already alluded to, and is not unfrequent among holders of life pol.: that of losing all benefit from the payment of prems. perhaps for 20 years, by emigration, by residence abroad, or by their inability from misfortune or otherwise any longer to provide for them.
>
> It should also be observed that the heavy expenses arising from the payment of fees to medical officers and others which so seriously trench upon the profits of assu. cos. will in this Asso. be altogether unnecessary; and also that from the nature of the So.'s operations it cannot be subjected to more than very moderate expenses; and with ordinary care is not liable to the frauds so frequently attempted upon life assu. offices.

The promoters of the Asso. were Mr. Geo. Scott, Act., and Mr. E. Benham, Solicitor. Mr. Scott was the Act. of the Asso., and prepared its T. and the scheme generally. The Hon. Earl of Harrowby was its President; Mr. Geo. Woolcott was Supt. of Agencies.

It may be truly said that no scheme was ever put before the British public which more entirely deserved success; but partly from inefficient management, and partly from the apathy of those most concerned, it died out within two years of its birth—involving some, but not a very serious loss on its projectors.

T. showing the Single Prem., as also the Yearly, Half-yearly, and Quarterly Prems., to assu. £100 at the age of 50 if unmarried. The assu. will have the option of receiving instead, if unmarried, £78 15s. 6d. at the age of 45, or £64 9s. 11d. at the age of 40. Premiums not returnable on Marriage. [referred to on the opposite page.]

Age.	Single Premium.	Premiums payable during five following Years.			Premiums payable during Ten following Years.	
		Yearly.	½-Yearly.	Quarterly.	Yearly.	½-Yearly.
Under	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
3 months	4 10 11	1 3 8	0 12 0	0 6 1	0 13 11	0 7 1
6 months	5 5 8	1 6 3	0 13 4	0 6 9	0 15 3	0 7 8
1 year	6 0 5	1 8 10	0 14 7	0 7 5	0 16 6	0 8 4
2	6 10 7	1 10 3	0 15 4	0 7 9	0 16 11	0 8 7
3	7 0 6	1 11 6	0 16 0	0 8 1	0 17 5	0 8 10
4	7 9 3	1 12 11	0 16 8	0 8 5	0 18 1	0 9 2
5	7 15 7	1 13 10	0 17 2	0 8 8	0 18 6	0 9 5
6	8 4 10	1 15 7	0 18 1	0 9 2	0 19 4	0 9 10
7	8 12 11	1 17 2	0 18 10	0 9 6	1 0 3	0 10 3
8	8 19 8	1 18 6	0 19 6	0 9 10	1 1 0	0 10 7
9	9 5 0	1 19 7	1 0 1	0 10 1	1 1 7	0 10 11
10	9 9 4	2 0 6	1 0 6	0 10 4	1 2 1	0 11 2
11	9 15 6	2 1 10	1 1 2	0 10 8	1 2 10	0 11 7
12	10 3 8	2 3 7	1 2 1	0 11 1	1 3 9	0 12 0
13	10 11 8	2 5 4	1 2 11	0 11 7	1 4 9	0 12 6
14	11 6 3	2 8 5	1 4 6	0 12 4	1 6 6	0 13 5
15	12 3 10	2 12 4	1 6 6	0 13 4	1 8 7	0 14 6
16	13 3 10	2 16 8	1 8 8	0 14 6	1 10 11	0 15 8
17	13 13 11	2 18 10	1 9 9	0 15 0	1 11 5	0 15 11
18	14 3 5	3 0 11	1 10 10	0 15 6	1 13 3	0 16 10
19	14 14 0	3 3 2	1 11 11	0 16 1	1 14 7	0 17 6
20	16 8 10	3 10 8	1 15 9	0 18 0	1 18 7	0 19 7
21	17 19 0	3 17 2	1 19 1	0 19 8		
22	19 10 3	4 3 10	2 2 6	1 1 5		
23	21 1 10	4 10 8	2 5 11	1 4 11		
24	22 14 3	4 17 8	2 9 5	1 5 6		
25	24 7 3	5 4 10	2 13 1	1 6 9		
26	26 0 10	5 12 2	2 16 9	1 8 7		
27	27 5 0	5 17 6	2 19 6	1 9 11		
28	28 5 5	6 2 1	3 1 10	1 11 1		
29	31 2 8	6 15 5	3 8 7	1 14 6		

Example.—The sum of 7*s.* 1*d.* for ages under 3 months, or 19*s.* 7*d.* at the age of 20, paid half-yearly for 10 years, will secure £100 at the age of 50, with the corresponding proportionate amounts at 45 or 40 instead, if unmarried; similarly £3 10*s.* 10*d.*, or £9 15*s.* 10*d.* at the same ages, will secure £1000 in each case, with proportionate amounts instead at either of the earlier ages.

FEME COVERT.—In Law, a term borrowed from the French to signify a married woman. See INSURABLE INTEREST; also MARRIED WOMAN'S PROPERTY ACT.

FEME SOLE.—A woman alone, *i.e.* an unmarried woman. See INSURABLE INTEREST.

FEME SOLE TRADER.—A woman who by the custom of Lond. trades on her own account, *independently of her husband*, is called a *feme sole trader*, or a *feme sole merchant;* because, with respect to her trading, she is the same as a *feme sole*, or single woman.

FEND OFF.—A sea term for pushing off a boat or any heavy body, to break the shock and avoid contact. So also a *fender* is a cushion of yarn, oakum, and rope, inserted between the sides of two boats, or of a boat or vessel, and any other object, to prevent contact and rubbing. So again *fender-pile*, constructed in front of wharves, river-walls, etc., to protect them from abrasion by floating bodies.

FENERATION.—Usury; the gain of interest; the practice of increasing money by lending.

FENN, W., Gen. Man. of *Rock* Marine, founded 1873.

FENNING, SAMUEL, sen., was Underwriter of *Royal Exchange* from 1792 to 1825.

FENNING, SAMUEL, jun., was Sec. of *Royal Exchange* from 1802 to 1840.

FENTON, WILLIAM, was Sec. of *Farmers and Graziers* at its formation in 1844, and for several years afterwards. He was also Act. and Sec. of *Agriculturist Cattle* from its foundation in 1845 down to 1848, when he had a disagreement with that Co. He was Act. of the *Merchants and Tradesmen's;* and during the years 1849–51 was Act. of *National Assu. Investment* Co.

FENUS [or FÆNUS].—From the Greek, signifying *Int. of Money*. See FÆNUS NAUTICUM.

FEOFFMENT.—In Law, a species of conveyance. It was in early times the public and solemn mode of alienating lands and tenements in possession, and was performed by a deed, accompanied by "livery of seisin"; which last was the delivery of the land itself, effected by certain symbolical acts and customary words. As other modes of conveyance to uses came into practice, feoffments gradually fell into disuse. The grantor is termed the *feoffor*, and the person receiving the *feoffee*.

FERGUSON, JAMES, pub. about 1770: *Tables and Tracts relative to several Arts and Sciences*, 2nd ed. 1771. His work contained various Mort. T. Dr. Price alludes to it in his *Rev. Payments*, 1783.

FERGUSON, WILLIAM, pub. in Edin. in 1839, *Interest Tables*. New ed. 1853.

FERGUSSON, SAMUEL R., was Sec. in Lond. of *Colonial* (No. 1), from 1855 to 1864. After the amalg. of that Co. with the *Standard*, he for a short period had charge of the West End (Lond.) branch of the amalgamated Co.

FERGUSSON, W. F., was for some years Man. of the *New Oriental* Assu. Co. in Calcutta. On the bus. of that Co. being amalg. with the *Medical Invalid* in 1853, he passed over to the last-named Co.; and on the union of the *Medical Invalid* with the *Albert*, he became Resident Director in Calcutta for the last-named Co. He died in India in 1867.

FERMAT, PETER DE.—An eminent mathematician born at Toulouse in 1590. It was he to whom Pascal communicated (probably about 1654) the principles upon which he had solved the problem in the laws of chance submitted by the Chevalier de Méré; and it was he who generalized those principles with a view to their application to kindred problems. His name will always be associated with the Science of Probabilities. He died in 1664. [PROBABILITIES, MATHEMATICAL SCIENCE OF.]

FERMENTATION (from the Latin, signifying *to boil*).—A term expressive of certain changes which take place in animal and vegetable substances, when reduced to a moist or liquid state by water or by vapour, or by steam, arising from close packing, damp situation, or want of ventilation. [COMBUSTION.]

Pasteur, in 1861, estab. the scientific fact, that fermentation depends upon the presence of minute organisms in the fermenting fluid, and that the source of all such organisms is in the atmosphere. [DISEASE, GERM THEORY OF.]

In our art. COMBUSTION, SPONTANEOUS, we have given many cases of fire losses resulting from this process of fermentation.

Fire Ins. pol. covering farming stock, or agricultural risks, always provide that the ins. shall not extend to losses arising from the natural heating of hay, corn, seeds, or other property. This, Mr. Bunyon shrewdly remarks, "seems to amount to a stipulation that the office will not be responsible for the results of bad farming." But while the property immediately the subject of natural heating is excepted, all adjoining and other property destroyed is covered by the pol.

There cannot be much doubt that a large number of fires in connexion with mills and other manufacturing premises have arisen from combustion consequent upon the fermentation of odds and ends of waste materials carelessly thrown aside, or stowed away in ignorance of probable consequences. We believe this risk is now much better understood than it was some years since.

In *Marine* Ins. it has long been a recognized principle that the underwriter is not liable for the loss of goods destroyed by spontaneous combustion, generated by effervescence or other chemical change, arising from their having been put on board wet, or otherwise damaged.

In *Boyd* v. *Dubois*, 1811, it was *held*, that if a fire arises on board a ship from the damaged quality of goods on board, which are insured, the underwriters are not liable. [SPONTANEOUS COMBUSTION.]

FERMO.—A city in the Pontifical States, which is reputed to have had a very early maritime code—even earlier than that of Pisa. It will be more convenient to examine this subject in a connected form, under PONTIFICAL STATES, MARITIME LAWS OF.

FERNIE, EBENEZER, for many years Man. Director of the *British Commercial*, which position he occupied down to the amalg. of the Co. in 1860.

FERNIE, JOHN, Man. in Edin. for the *Gt. Britain Mut.* since 1871. He had not previously been connected with Ins. bus.

FERTILITY.—A term implying FECUNDITY, and which, in its application to the human race, we have discussed under that title.

FEU VOLAGE.—Literally, *flying fire*.

FEUD [or FEOD].—The right which the vassal has in land, or some immovable property of his lord, to use the same and take the profits thereof, rendering unto the lord such duties and services as belonged to the particular tenure. The actual property in the soil always remains in the lord, *i.e.* lord of the soil.

FEUDAL SYSTEM.—That scheme of tenure which the Conqueror perfected in England, thereby displacing the Saxon laws of property, and building up a system which became a distinguishing feature in the Middle Ages. Relics of this system, as still existing in regard to estates and inheritance, constantly give rise to subjects of actuarial valuation.

FEUDATARY [or FEODATORY].—The tenant who holds his estate by feudal service.

FEVER (from the Latin *Febris*).—Fevers occupy a very important position in the order of Zymotic Diseases; and in their several varieties account for a considerable portion of our ann. mort. When we are on what we may term for illustration a "peace footing," they occasion ann. 15,000 deaths, the result of 150,000 disablements (the deaths we shall see average about 1 in 10 of the attacks). When in epidemic form they wage war against mankind, the slaughter is immense. See the range they occupy in the catalogue of diseases! Beginning with (1) ERUPTIVE F. (*Exanthemata*), we have Smallpox (*Variola*), Cowpox (*Variola Vacciniæ*), Chickenpox (*Varicella*), Miliary F. (*Miliaria*), Measles (*Morbilli*), Scarlet F. (*Scarlatina*), Hybrid or Measles and Scarlet F. (*Rubeola*), Dengue (*Scarlatina Rheumatica*), Erysipelas (*Erysipelas*), The Plague (*Pestis*); (2) CONTINUED F., embracing Typhoid F. (*Febris Typhoides*), Typhus F. (*Febris Typhus*), Relapsing F. (*Febris Recurrens*), Simple Continued F. or Febricula (*Febris Continua*), Specific Yellow F. (*Febris Icterodes*); (3) The LITORAL, MALARIAL, or PALUDAL F., including Intermittent Paludal F. or Ague (*Febris Intermittens*), Remittent Paludal F. (*Febris Remittens*), Malarious Yellow F. (*Febris Icterodes Remittens*); (4) MUCUS F., embracing Influenza (*Influenza*), Whooping Cough (*Pertussis*), Diphtheria (*Diphtheria*), Croup (*Cynanche Trachealis*), Dysentery (*Dysenteria*), Diarrhœa (*Diarrhœa*), Cholera (*Cholera*).

It will be seen that many of the varieties included in this classification have already been dealt with under separate heads, or will be so dealt with in their proper alphabetical place. We have therefore only here to treat of those less distinct varieties which are popularly spoken of under the general title of Fever.

In ordinary practice the scientific classification we have set out, in view of completeness, is not followed. Fevers are denominated according to their more characteristic symptoms as *Inflammatory*, *Typhoid* (sometimes called *Gastric* or *Intestinal* F.), *Relapsing* F., *Typhus* or *Putrid*, *Nervous* F. etc.; or according to the cutaneous appearances connected with them, as *Scarlet* F., *Yellow* F., *Purple* F., *Black* F., etc.

The symptoms of F. generally undergo a change every 24 hours: this change is called an *exacerbation*. The fluctuations often take place more than once in the day, and when this is the case, and the violence of the attacks increases with their occurrence, the disease is classed as *Continued* F. If the exacerbation and remission of symptoms are well marked, and occur once or oftener in the day, the F. is called *Remittent*. If the F. leaves the patient after some hours' duration, and returns at stated intervals, it is called *Intermittent*.

Dr. Murchison (1862) says: The term F. or Pyrexia is employed in two very different senses: first to express that group of general constitutional symptoms which accompany local inflammations; and secondly, to denote a similar group of symptoms, which, though occasionally complicated with local inflammations, are independent of them, and result from the absorption of some poison into the system from without, or from the action on the nervous system of a non-specific cause. In the former case we say that the F. is *symptomatic*; in the latter, *idiopathic* or *essential*. He adds:

> It would be more curious than instructive to discuss the numerous views, according to which medical writers have endeavoured to explain the phenomena of F.—to show how the humoral pathologists, headed by Hippocrates and Galen, looked upon F. as the result of a contest on the part of nature to expel from the system a superabundance of one or other of the four humours, blood, phlegm, yellow or black bile; how the solidists, represented by Fernelius, Hoffmann, and Cullen, imputed it to changes in the living solids; how, on the one hand, Tweedie insisted that the blood was primarily affected, while on the other, Christison urged that the first link in the chain of events was derangement of the nervous system; how Brown held that F. was an asthenic state of the system arising from an abstraction of the natural stimuli, or from exhaustion, direct or indirect, of the excitability; how Ploncquet, Beddoes, Clutterbuck, Armstrong, Mills, and Brousasis maintained that F. was always the result of inflammation or congestion.

He further observes that it is not a little remarkable that modern investigations tend to reproduce, in a scientific form, certain crude opinions concerning the nature of F. which were entertained by the earliest writers on medicine. Great difference of opinion has prevailed, and still prevails, among leading members of the medical profession in our own time regarding the originating causes of F. Prob. the great majority believe the F. is chiefly or solely due to emanations from putrefying animal and vegetable matter; and they consequently condemn, on this ground, all accumulations of such matters in the midst of the dwellings of the people. On the other hand, there are many esteemed authorities who affirm that putrefying animal and vegetable matter is never the true cause of F. We shall quote a few of the last named, on whom we consider the onus of proof lies, and so render the reader familiar with their arguments. We are disposed to agree with the opinion expressed by Dr. Guy, after he had passed these authorities in review, "that the truth will hereafter be found to lie between the two extremes."

Sir Gilbert Blane, in his *Medical Logic*, 1819, after stating that he agreed with Dr. Bancroft in thinking "that febrile miasmata do not in any case consist in the exhalations of simple putrefaction," admits that F. may be produced by the "sordes of the skin and tainted effluvia of the living human body," and especially mentions the exhalations from the holds of ships. Thackrah, in his *Effects of Arts, Trades, and Professions, etc., on Health and Longevity*, 1831, speaks of "the innoxious, and even beneficial, character of animal exhalations," as strongly exhibited in the case of slaughtermen. Again, "Animal exhalations, even the most offensive to the senses, and generally supposed to be very prejudicial, an examination shows to be really useful;" and he gives instances in point. [OCCUPATIONS.] Dunglison, in his *Elements of Hygiene*, 1835, speaking of "emanations from animal and vegetable substances in a state of decomposition," gives it as his opinion "that the admixture of such emanations with the air does not affect public salubrity to such an extent as might be imagined." Dr. Watson, in his *Lectures on the Principles and Practice of Physic*, 1843, distinctly affirms "that neither animal nor vegetable decomposition is sufficient to generate fever of any kind." Dr. Christison, in the *Library of Medicine* (vol. i. p. 162) says: "Since continued F. clearly originates often in propagation from the sick to the healthy, it becomes a second question of much interest, whether it originates in any other cause. Authors and practitioners seem in general to be very easily satisfied upon this head, and to have decided the matter in the affirmative; nay, some talk with the utmost familiarity of various special causes, such as cold, fatigue, mental emotions, putrid effluvia, excess of the table, and the like. But the question of the origin of continued F. and their causes is far from being easily settled to the satisfaction of a philosophic mind." Dr. Guy, M.B., in the Journ. of the Statistical So. 1848 (vol. xi. p. 79), says: "My own recent inquiries, and especially the facts detailed in this communication, certainly tend to confirm an opinion which I have more than once expressed, that filth is rather the *nurse* than the *parent* of F., to which I would now add the expression of my opinion that in extreme cases F. may be bred of filth. The extreme cases are to be found, as I believe, not in the neighbourhood of dust-heaps and accumulations of animal or vegetable matter in the open air, but in houses inverted over cesspools, or otherwise made the receivers of all foul evacuations from ill-constructed drains, or in houses crowded to excess with dirty and squalid occupants. Even in those extreme cases, however, but especially where they occur in the midst of crowded pop., there is great difficulty in forming a sound opinion, as in the midst of such pop. the seeds of all sorts of contagious diseases are likely to be very generally diffused, and ready at any moment to germinate into this destructive malady."

We shall in this present paper bring the light of more recent investigation to bear on the subject.

In the early B. of Mort. the deaths of this class are usually arranged under the heading "Ague and Fever;" and they will generally be found to be greater in number than any other enumerated cause, except in the great "Plague Years," see B. OF MORT.; DEATHS, CAUSES OF. Then again the deaths from F. were not all classed under one general head, as will be easily seen on referring to the Bills. They had other items, as "spotted fever and purples." The later Bills were improved in this respect.

1732.—Maitland, in his *Hist. of Lond.*, says that in this year "a cold, attended with a fever, raged violently in this city, and for the space of five or six weeks committed great ravages, especially among the aged, whom it cut down like grass, insomuch that the B. of Mort. in one week increased to near quadruple the usual number. This distemper was so general that it was by the best observers computed that not one in six escaped it.

1750.—Sir John Pringle pub. *Obs. on the Nature and Cure of Hospital and Jail Fevers;* wherein he drew attention to many points in connexion with his subject, the neglect of which amounted to an almost national disgrace; and which it required the philanthropic energy of a Howard to ameliorate.

1790.—Dr. Robert Robinson, M.D., pub. *An Essay on Fevers: wherein their Theoretic Genera, Species, and various Denominations, are, from obs. and experience for thirty years, in Europe, Africa, and America, and on the intermediate seas, reduced under their characteristic Genus, Febrile Infection, and their Cure estab. on philosophical induction.* This work is written in a popular, and not a professional style—hence its claims to specific notice. It must have been productive of much good.

It is desirable to state that purely professional works on the nature and cure of F. are not mentioned here—their number is legion.

1798.—Malthus, in his *Essay on Pop.*, observes in relation to Continued F. that it is always to be apprehended in an epidemic form when the pop. considerably exceeds the demand for labour, and the means of comfortable subsistence derived from labour.

1817.—A great fever epidemic prevailed in Ireland during this year; and afterwards the experience of medical practitioners in all parts of that country was collected and digested by eminent men appointed by the Gov. for that purpose. The peculiar efficacy of *want and misery* in causing the extension of the disease seems to have been observed and admitted by all the practitioners; and was confirmed in the fullest degree by the Gov. reporters. The only question which has admitted of any dispute by those who have subsequently dealt with these investigations is whether want and misery are sufficient to engender the disease, or only to give efficacy to the specific contagion.

1832.—Marshall, in his *Mort. of the Metropolis*, pub. 1832, reviewing the causes of death as shown by the Lond. B. of Mort. during a period of 204 years ending 1831, says: "From 1629 to 1689 fevers seem to have been exceedingly variable; from the latter date down to 1750, more uniform and general; and since 1750 down to 1831, gradually to have diminished, while inflammatory disease has increased in a greater ratio than fever has diminished. Supposing the distinctions to have been properly made in the reports, the decrease of fever and increase of inflammation are features of peculiar interest, and may be regarded as add. evidence of the inscrutable working of Nature, and its ever-varying, yet uniform process."

1834.—In the *Rep. on the State of our Knowledge of the Laws of Contagion*, presented to the Brit. Asso. this year by Dr. William Henry, M.D., F.R.S., etc.—a most able document, often quoted in these pages—we find the following, in continuation of a passage from the same Rep. we have already quoted under ENDEMIC DISEASES:

> 1. . . . From marshy ground exhalations almost constantly ascend, which give rise to F. of a peculiar type, called *remittents* when they occasionally abate, and *intermittents* when the symptoms are absent for distinct intervals. *In no instance has a remittent or intermittent been communicated from one individual to another;* but intermittents are apt to pass into remittents, and the latter to assume a continued type, when they become decidedly contagious.
>
> 2. Marshy exhalations, or *miasms*, as they may be exclusively called (to distinguish them from animal contagions), are evolved most abundantly in hot weather, from ground which is alternately moist and dry, or barely covered with water; not if entirely or constantly inundated. Either fresh or sea water is adequate to their production; but the alternation of the two has, in certain situations, rendered miasms particularly virulent. Marshy ground, however, is not essential; for the half-dried gravelly beds of rivers have been observed to occasion F. of a severe type. In a few instances newly broken ground is recorded to have had the same effect. [It is of constant occurrence in parts of the U.S.] In general, miasms occupy low situations, insomuch that no greater an elevation than the upper stories of a house has afforded protection against them. But this is not universal, for they have been known to rise to considerable heights: though in such instances the form of the ground indicates that they have been carried up inclined planes, by winds blowing from the place of their production. The sphere of the activity of marsh miasms surpasses beyond comparison that of animal contagions: obviously on account of the infinitely greater quantity in which they are generated. The Pontine marshes, covering an area of 8 leagues by 2, have spread their deleterious exhalations, in certain directions of the wind, to the mouth of the Tiber. In the West Indies miasms have affected the crews of vessels moored 1500 toises (3200 Eng. yards) from the shore (Monfalan); but this is prob. much more than the usual distance.
>
> 3. The chemical properties of marsh miasms have been investigated by several writers, but with little other fruit than a catalogue of negative qualities. Miasms are not the mere products of putrefaction, and have not necessarily a fetid odour. Experiment has not demonstrated any departure, in the air over marshes, from its usual proportions as to oxygen and azotic gases. Neither carburetted, sulphuretted, or phosphuretted hydrogen, nor ammonia, has been detected in these exhalations. The principle upon which their peculiar agency depends still remains to be determined by experiment.
>
> 4. There are several points of analogy between the operation of marsh miasms and that of contagious poisons upon the human body. Both require a certain predisposition in the persons exposed to them; and this susceptibility is imparted by the same causes. The power of resisting miasms as well as contagions is acquired by habit, at least to a certain extent. But no continuance of usage ever protects persons who are constantly exposed to an atmosphere impregnated with exhalations constituting *malaria* from their pernicious effects. *In some marshy countries the perfect and vigorous human form is never seen;* and a race of men inhabit them who are alike destitute of physical and mental energy, and who in middle life exhibit all the signs of old age. Strangers arriving there are doomed to inevitable destruction; and all attempts to extend our geographical knowledge of such regions, however well concerted, have been baffled by the overwhelming power of endemic pestilence.

The experience of the Lond. Fever Hospital for the ten years preceding Jan. 1834, which included obs. on nearly 6000 F. patients, was taken out by Dr. Southwood Smith and submitted by him to Mr. John Finlaison, who constructed the following T. therefrom:

Suppose 100,000 patients to be attacked with F., between the	
ages of 5 and 16 there would die	8,266
between 15 ,, 26 out of an equal number there would die ...	11,494
,, 25 ,, 36 ,, ,,	17,071
,, 35 ,, 46 ,, ,,	21,960
,, 45 ,, 56 ,, ,,	30,493
,, 55 ,, 66 ,, ,,	40,708
,, 65 and upwards ,, ,,	44,643

Thus the risk of life from this malady was shown to be twice as great at the age of 31 as at age 11; nearly twice as great at 41 as at 21; five times as great at 61 as at 11; and four times as great at above 65 as at 21.

1837.—Dr. Southwood Smith, in his *Philosophy of Health*, 1836–7 [we quote from 3rd ed. 1847], gave the following statistics of the mort. of F. patients in some of the principal hospitals of Europe:

Saint Bartholomew Saint Thomas's } Lond.	in 1685 ...	1 in 7 to 1 in 10
Ditto ,,	1773 to 1783	1 in 11
Ditto ,,	1803 to 1813	1 in 16
Ditto average of 50	years to 1813	1 in 15
Charité of Berlin	1796 to 1817	1 in 6
Dresden	,, ,,	1 in 7
Munich	,, ,,	1 in 9
Dublin Fever Hospital	1804 to 1812	1 in 12
Imperial St. Petersburg	1804 to 1817	1 in 4½
Bath	1827	1 in 20

In the small towns the mort. was usually at a less rate than in the larger ones.

1838.—Fever prevailed in Eng. much more extensively than in any preceding year during the previous century. The proportion of deaths from this cause to the whole mort. of the year, as shown by the 2nd Rep. of the Reg.-Gen., was as follows in the following places:

In London	7·7 p.c.	In Birmingham	5·0 p.c.
,, Manchester	7·7 ,,	,, Leeds	3·6 ,,
,, Liverpool	6·9 ,,		

Dr. Arnott, Dr. Kay (afterwards Dr. Kay Shuttleworth), and Dr. Southwood Smith, were appointed by the Poor Law Commissioners to inquire into the causes of this F. in parts of Lond. Their Rep. threw a considerable amount of light upon the subject.

Dr. A. S. Thomson collected together and contributed to the *Edinburgh Medical and Surgical Journ.* 1838, a mass of statistical information respecting Fevers in Gt. Britain, under the title of *A Statistical Inquiry on Fever, etc.* He endeavoured from the data obtained to ascertain the prevalence, susceptibility, intensity, and prognosis of the disease. The results of his investigation, briefly stated, were the following: 1. The ann. ratio of deaths from F. in Lond. have decreased since the commencement of the 18th century. 2. The susceptibility to be attacked by F. is greatest among individuals under 10 years of age, and from 20 to 30. 3. The period of life during which the highest ratio of mort. occurs from F. is from 40 to 50. 4. There is no very apparent difference in regard to one sex being more susceptible of F. than the other. 5. The ann. ratio of deaths by F. is nearly twice as great among the male as among the female pop. 6. There is about 1 death for every 15 persons attacked by F. 7. The intensity of F. increases with the age of the patient, about 34 p.c. every decennial advance in life. 8. Attacks of F. are one-third more intense among males than females. 9. Fever is most prevalent from July to Dec. inclusive. 10. The intensity of F. is much greater during Jan., Feb., March, April, and May, than in any other part of the year. 11. During those months in which F. is most prevalent the temperature and quantity of rain is considerably greater than during those months in which F. is not so prevalent. 12. During those months in which F. is most intense the temperature and quantity of rain is comparatively low. 13. Medical treatment has a powerful effect in lessening the danger or number of deaths from F. 14. Early medical treatment shortens the duration of F. 15. The mean duration of F. among individuals under 40 is shorter than among those above that period of life. 16. The general prognosis of F. is favourable, there being 14 chances to 1 that the patient will recover. 17. The prognosis of F. becomes less favourable as the patient is advanced in life, the intensity of the disease being nearly twice as great at 41 years of age as at 21. 18. The prognosis of F. is one-third more favourable among females than males. 19. The prognosis of F. is more favourable from June to Dec. than from Jan. to June. 20. The prognosis of F. is one-half more favourable among patients who come under medical treatment before the 7th day of the disease than among those who are admitted at a later period. 21. The prognosis of F. is unfavourable when there are cerebral or thoracic complications. 22. The second week of F. is the most dangerous. Out of 1000 cases passing through this week, 82 died.

The editor of the *Statistical Journ.*, in reviewing these results, offers the following important obs.:

> There is no science in which statistical investigation is more necessary than in medicine; and there are few to which it has hitherto been less applied. The physician knows that certain medicines produce certain effects, that certain diseases usually last a certain time, and that some are more fatal than others; but he has never, or rarely, ascertained this by numerical computation; his knowledge is the result of an experience dependent upon memory alone, and liable to be influenced by partial or prejudiced views; and if he were to be asked what were the average duration of a disease, or in what proportion one disease were more fatal than another, he would be at a loss for an answer. On the Continent the true value of statistical investigation in ascertaining the results of diseases has long been duly estimated; but in this country, the advantage of employing enumeration to obtain these results and to investigate general facts has only of late years come into importance.

1839.—A paper was read before the Statistical So. of Lond. by Mr. J. W. C. Lever, *On the Sickness and Mort. among the Troops in the U. K.*; being an abstract of the Statistical Rep. of Major Tulloch. The returns here given are believed to have been made with great exactitude. The proportion of deaths which had occurred during the 7 years subsequent to Jan. 1830 by this class of diseases was found to be as follows in the following troops:

	p. 1000 of strength.
In the Dragoon Guards and Dragoons it was ascertained to have been	1·4
Household Cavalry	1·6
Civil Life	1·6
Foot Guards	1·7
West India Depôts	2·8

Excluding the last—introduced for the purpose of comparison—and taking the average of the 4 others, 1·6 p. 1000 may be computed to die ann. from F. The admissions were about 75 p. 1000 ann., and the proportion of deaths to admissions appeared to be about 1 in 55. He adds: From an extensive series of obs. it appears that among troops serving in the U. K., fevers were more prevalent during the summer than the winter months, in the proportion of 5 to 4. Of 4499 attacks, 2531 or 56 p.c. occurred between May and Oct.; and only 1968 or 44 p.c. during the rest of the year. In 1832 and 1834, however, the preponderance of febrile cases was in those months which in other years were most exempt from them. In civil life in this country, fevers are more prevalent in summer, but more fatal in winter.

In *Dundee* on an average of 7 years before 1839 the deaths from F. were 10·9 p.c. of the whole mort. In 1836 it was 15 p.c. of the whole.

On the 11th July, 1839, a serious outbreak of Typhus F. occurred at North Tawton, near Crediton, in Devonshire, a village with less than 2000 inhabitants. This outbreak appears first to have drawn the attention of Dr. Budd to the subject of F. (See 1874.)

1840.—In the *Rep. of a Committee of the Statis. So. of Lond., appointed to collect and inquire into V. Statis, upon the Sickness and Mort. among the European and Native Troops serving in the Madras Presidency, from the Year* 1793 *to* 1838, much valuable information is given, which we do not however propose to follow in any detail. Taking the shorter period of 12 years, 1827–38, both inclusive, we learn that the most frequent type among European troops was continued F.; but that was not so fatal in its character, and did not occasion so many deaths, as the "remittent," although the latter was only one-third as frequent. Among the native troops, "intermittent" F. was both the most frequent type and caused the greatest number of deaths, although it was not so fatal to those attacked as the other types. It did not appear that F. of an epidemic nature, or of a malignant character, prevailed to any extent among either the European or native troops during the 12 years under review; although during seasons when the troops were in active service, or were still suffering from the effects of such service, the sickness and mort. were more than doubled.

Dr. W. P. Alison, M.D., Prof. of the Institutes of Medicine in the University of Edin., in a paper read before the Brit. Asso. in 1840: *Illustrations of the Practical Operation of the Scottish System of Management of the Poor*, says that the destitution, and the irregular mode of life connected with the destitution of many of the lower ranks in Edin., as in other of the great towns of Scotland, are the chief cause of the frequent diffusion of epidemic F. in them; and that merely owing to the filth which is always found in connexion with such a mode of life. His conclusions being based on the following considerations:—

1. It is a general principle in pathology, estab. by the general experience of medical men in all ages, in civil life, as well as in military or naval service, that contagion, and indeed every other cause of acute disease, acts most rapidly and most certainly on the human body when enfeebled by deficient nourishment, by insufficient protection against cold, by mental depression, by occasional intemperance, and by crowding in small ill-aired rooms, all of which are the constant concomitants, as I believe the inevitable effects, of destitution in the poorer inhabitants of this and other great towns.

2. It has been very generally observed, on a large scale, in the hist. of contagious F., that it has spread most rapidly and extensively, and assumed the form of an epidemic, in circumstances where most or all of these conditions have been present. For example: after scarcities; after the sudden cessation of the employment for numerous labourers; in exhausted, impoverished, or beaten armies; in besieged towns, etc.

3. This has been more especially the result of very numerous and careful obs. made in Ireland on epidemic F., precisely similar to those lately prevalent in Scot., and from which in fact very many of the cases occurring in Scot. during the present century have obviously originated.

He expresses his firm conviction that any inquiry into the sanitary condition of the lower orders, and especially into the extension of contagious F., must necessarily be incomplete, unless it includes a thorough investigation and comparison of the nature and administration of the legal provisions for the poor.

Dr. Robert Cowan, M.D., in his *V. Statis. of Glasgow*, etc., 1840, showed that the number of cases of F. in that city in the 5 years ending Dec. 1839 must have been not less than 55,000 in a pop. under 300,000, that is, more than one-sixth. Dr. W. P. Alison, M.D., of the University of Edin., considered that the number of F. cases in Edin. and Leith during the same period must have been nearly 15,000 in a pop. certainly under 180,000, *i.e.* not less than one-twelfth of the whole.

In *Glasgow* the mort. from F. on an average of the 7 years ending 1840 was of the whole mort. 11·8 p.c. In 1837 it was as high as 20·4 p.c.; in 1840 it was 13·93 p.c.

1841.—Major A. M. Tulloch read a paper before the Statistical So. of London: *Comparison of the Sickness, Mort., and Prevailing Diseases among Seamen and Soldiers, as shown by the Naval and Military Statistical Reports*, wherein is contained the following comparative T. for the 7 years 1830–7:

FEVERS.	NAVAL FORCE.		MILITARY FORCE.	
	Out of an aggregate strength of 55,709		Out of an aggregate strength of 62,300	
	Attacked.	Died.	Attacked.	Died.
Intermittent	337	6	2558	5
Remittent	553	10	2486	144
Common Continued ...	3787	68	8103	72
Typhus, etc.	...	...	26	10
Total	4677	84	13,173	231
Ann. ratio p. 1000 of mean strength... ...	84	1·5	211	3·7

It is here seen that fevers were about twice as prevalent and fatal among the military as among the naval force during the period under obs.—"a circumstance (says Major Tulloch) which will not excite surprise, when it is kept in view that F. depend so very materially on locality; and that while the troops are at all times constrained to remain in a spot which may be the very focus of the disease, a vessel can choose her position, and either lie at a distance from the shore, or if that precaution proves unavailing, can put to sea, and speedily place her crew beyond the reach of danger." He points out another circumstance which tends to invalidate this comparison. Nearly two-fifths of the land force in the Mediterranean were stationed on the Ionian Islands, where almost all the cases of intermittent and remittent fevers among the troops had occurred; while only a small proportion of the Navy was ever employed in that quarter. "Had the comparison been made with the troops serving in Gibraltar and Malta, where the greater part of the fleet is stationed, the proportion of febrile attacks in the military and naval forces would have been respectively as 133 to 84, and the proportion of deaths as 2·1 to 1·5." The remarkable coincidence in the proportion of deaths to attacks in the two services showed that there could be little difference in the efficacy of the mode of treatment employed; for among the sailors 1 case in 56 proved fatal; and among the soldiers 1 in 57—the result being to within a fraction the same in both cases.

At the census for Ireland in 1841 returns were made of the deaths during the 10 preceding years. The deaths by F. were returned at 112,072, being 1 death in every 10·59 of the mort. from all causes, and 1 in 3·4 of the total deaths from epidemic diseases. The proportion of the sexes stood as follows: 86·14 females to 100 males. The result of investigations then made led to the belief that the visits of F. epidemic in Ireland occurred periodically—every 10 or 12 years.

1842.—In a paper by Dr. W. P. Alison, M.D., read before the Brit. Asso. this year: *On the Destitution and Mort. in some of the large Towns in Scotland*, speaking of the greater liability of the Scotch towns to suffer from contagious F., he said: That while the highest mort. from that cause recorded in Eng. was 7·7 p.c. of the whole mort., and that only in Lond. and Manchester for 1 year—the general proportion being about 4 p.c., it appeared from various documents obtained by Mr. Watt, that in *Glasgow* in 1837 it was about 20 p.c.; in *Dundee* in 1836, 15 p.c.; in *Glasgow*, on an average of the last 5 years, 13·8 p.c.; in *Edin.* for the last 3 years, 9·2 p.c.; in *Dundee* for the last 3 years, 8·4 p.c.—the year of the greatest epidemic not being included in the case of either of the last two towns; in *Aberdeen* for the last 5 years, 14·2 p.c.; and during the last year in *Edin.* 10·27 p.c. of the whole mort. Even in *Perth* for 5 years it was 7·4 p.c.

1847.—In the First Rep. of the Metropolitan Sanatory Commissioners issued in 1847, there was given the following summary of the increasing visitations of F. in modern times:

> Though cases of F. were always present in certain localities in the metropolis, yet several years commonly intervened between one epidemic season or year and another; but F. assuming a severer character, and spreading more extensively than usual in 1838, has prevailed as an epidemic ever since. The admissions into the Lond. F. Hospital since April [the Rep. was pub. in Nov.] have exceeded by several hundreds those of any corresponding period. The steadily-increasing prevalence of F. in the Metropolis is further shown by the Reg.-Gen.'s return of the weekly deaths from Typhus during the last 3 years. The weekly deaths from typhus in 1846 very generally and greatly preponderated over those in 1845—being in several weeks nearly double, and in some few more than double. The deaths of 1847 were still more in excess than those of 1846—being in numerous instances considerably more than double the number in the corresponding weeks of 1846, and in one instance more than treble; and generally from the month of Aug. of the present year (1847) the mort. has been considerably greater than at any previous period since the commencement of the Regis. It is clear therefore that whatever may have been their intensity in former years, the causes of epidemic disease continue to operate in the metropolis with unabated, and even with increased force at the present time.

The following passage from the same Rep. may be regarded as explanatory;

> The dreadful extent to which entire classes of the pop. who have abundance of wholesome food, but who habitually live in impure air, suffer from certain epidemics, as, for example, artizans, and the lower class of shopkeepers, from the very pestilence in question, affords a demonstration that the habitual respiration of impure air is an incomparably more powerful predisponent to epidemic disease than that which has been commonly assumed as the main cause, viz. absolute poverty.

1848.—Dr. W. A. Guy, M.B., contributed to the Journ. of the Statistical So. a paper: *On the Health of Nightmen, Scavengers, and Dustmen*; the contents of which we shall have to review more particularly under OCCUPATIONS; but from which we now draw the following passages:

> But the most remarkable result of the comparison is displayed in the relative liability of the three classes to F. . . . It will be seen that the number of men attacked by F. among the scavengers is 8 p.c.; among bricklayers' labourers 35½ p.c.; and among brickmakers 21½ p.c. . . . In other words, the bricklayer's labourer is more than 4 times, and the brickmaker nearly 3 times as liable to F. as the scavenger. . . . The excess in the number of F. cases occurring among the bricklayers' labourers is a very remarkable fact. I had examined 16 of the men before it occurred to me to inquire whether they had been attacked in England or Ireland; but in the case of the remainder I took care to ascertain this point. The result of the inquiry was that 12 out of the 57 had been attacked in Ireland, 1 in France, and 9 in Eng. These 9 cases of F. out of a total of 57 (or nearly 16 p.c) must therefore have occurred while the men were following their particular occupation. Whether the occupation itself is in any way to blame, is a question that must be reserved for examination presently.

In a later portion of the same paper he says:

> I am disposed to attribute the great liability of the bricklayer's labourer to F. *to the habit of overcrowding so common among the Irish*; and I think it is not unlikely that the somewhat lower liability to F. of the brickmaker may be due to his mode of living.

1851.—The Commissioners of the Irish Census taken this year, in their able rep. on the causes of death, say:

> It is more than prob. that Continuous F. existed in Ireland from very early times; and in all likelihood formed the great bulk of the pestilences entitled "Plague," and by the very oldest writers, *Tamh* and *Teidhm*. The definition of *Teascha*, "the hot, burning, heavy sickness," however, leaves no doubt upon our minds of its being a true F. It is not a little remarkable that the first specific mention of this disease should be during that very well marked "pestilential period" in the middle of the eighth century, which was characterized by peculiar wet, cold, and other atmospheric phenomena: also by scarcity, cattle distempers, and an epidemic of dysentery for many years; and which concluded with the first *Lamhchomart*, or the great lamentation. The next entry of the term does not occur until A.D. 1224 (although many plagues, prob. including F., intervened), when another "Epidemic Constitution," distinguished for vegetable blight and cattle murrain, prevailed. Again the *Teascha* was associated with dysentery.

The T. they furnish will be incorporated in our T. at the end of this art.

The returns of deaths from F. for the preceding 10 years obtained by the Census Commissioners showed a total of 222,029, being in the proportion of 1 in 6·1 of the entire mort. of the period. Of the females there died 88·9 to every 100 males.

1852.—Dr. W. Farr read a paper before the Sta. So.: *Influence of Elevation on the Fatality of Cholera*. Under the general proposition that "the great pestilences of the day are all most fatal in low places," we find a sub-heading "Ague and Remittent Fever," wherein it is stated: The marsh-fever of the intermittent, remittent, and continued form, exists in parts of Eng. and in almost every kingdom of the world. The F. of the Mediterranean appears to be a milder form of the remittent of the tropics. Its type is well seen in the Tuscan Maremma, an account of which had been pub. at Florence in 1844—*Statistica Medica delle Meremme Toscane*. M. Salvagnoli Marchetti, who compiled that account at the instance of the Duke of Tuscany, gives the following details:

The Tuscan Maremma lies along the Mediterranean; commencing at San Vicenzio, it extends to the river Chiarone, on the borders of the Papal States. It is chiefly in the province of Grosseto, and comprises a considerable territory of mountain, hill, and beautiful plain. The insalubrity is at its maximum in the plains; slight among the hills; inappreciable in the mountains. Ten towns and castles are mentioned that are abandoned by the greater part of the inhabitants in the summer. Some are far from the sea, some far from the marshes. The blood of the inhabitants of the Maremma is changed. All the physicians (according to Dr. Marchetti) who have attentively examined it are struck by the character it presents, which is so constant and striking that by the blood alone you can distinguish the patient living habitually on a malarious soil from a person residing in a healthy country. A chemical analysis, by Prof. Cozzi, showed a deficiency of fibrine, albumen, fatty matter, and phosphates, and an appreciable quantity of cholesterine. Nutrition is feeble, digestion bad, the liver disordered, the spleen swollen, respiration weak; the heart is flaccid, and beats feebly. The countenance is of a palish sallow tint, as in a chlorotic girl, or yellow, as in jaundice. The muscular movements are languid; bodily exercise fatiguing. Sensibility is diminished. Strangers in the malaria speedily feel its effects; they undergo a great change, and some acquire the constitution of the inhabitants of the Maremma. Such is the effect of the low lands of Italy on the pop., not only of the Tuscan Maremma, but of the Pontine marshes, and all the other depressed parts of the Mediterranean coast.

We are next transported to the regions of Yellow F., which is also generated in and almost confined to lands of low elevation. The Delta of the Mississippi, in the Gulf of Mexico, is the great centre. We shall speak in detail of this class of F. under its own designation.

The West Indies and the West Coast of Africa in the tropics are decimated by a deadly remittent F. which is closely allied to Yellow F.

The *Scottish Widows* Fund in 37 years (1815 to 1852) had 117 deaths from Continued F. Of these 61, or more than half, happened between ages 30 and 50. The general proportion to the whole number of deaths was about 8 p.c. In the next septennium the proportion was reduced to 5 p.c.

1855.—The *Standard* Life in the quinquennium 1845-50 had 37 cases of Typhus and 1 of Gastric F. In the quinquennium 1850-1855 it had 30 of Typhus and 7 of Gastric: giving 23·5 p.c. of the total mort. in the first, and 12·8 in the second period. Of Tropical F. it had one death in the first, and 7 in the second period.

Mr. Alfred Haviland, in his excellent work *Climate, Weather, and Disease*, 1855, says fevers are called zymotic diseases, from the idea that their spread through the system is brought about by a "fermentative process"; and then proceeds:

> In a healthy condition of the body, all the disintegrated tissues, the result of use, are carried off by the different emunctories so soon as they get into the blood; the purification then of this fluid is constantly going on, so long as the different excreting organs do their work healthily. On the other hand, should there be any barrier to the elimination of this putrescible matter from the blood, on account of either the liver, the kidneys, the skin, or the mucus lining of the intestines, being unable, from disease or obstruction, to fulfil their respective duties,—an effort will be made by nature to get rid of the difficulty, by making one organ take on the duty of the defective one for the time being: the skin may be relieved by the kidneys; these organs may be relieved by the bowels; and so on; but it must be evident that such a state of things cannot last long: the disorganized result of the waste of the tissues accumulates in the blood, and thus poisons it, rendering it capable of taking on a process supposed to be identical with fermentation—should a leaven from without, in the form either of putrid emanations from diseased bodies, or decayed animal and vegetable matter, come in contact

with it, either through the medium of the stomach, lungs or skin. Deficient action, therefore, of the scavenger organs of the body, is one source of the accumulation of deleterious matter in the blood. It will be perceived upon a little consideration, however, that this is not the only condition of the body that brings about a retention of effete matter in the system. All the organs may act well, and yet not be liable to depurate the blood sufficiently fast: this would be the case after over-physical fatigue, during which there had been a great waste of tissues, which, were time given, would be duly eliminated: at the time however that the excess of effete matter remains in the blood, this fluid is highly susceptible of those exciting causes which form our subject.

There are many more passages in the same work bearing on the subject of F.

1860.—The *North British* Life reported 94 deaths from Continued F. during 37 years (1823 to 1860). The average duration of each pol. was 8½ years from the time of ins.; and the average expec. 28·66. The per-centage of total mort. 7·21. Dr. Burt notes the professions and occupations of those who were the victims of F. Merchants and shopkeepers 16; clergymen 4; military officers 4; farmers 6; innkeepers 4; no profession 10; females 6. The remainder were spread over a variety of occupations. Of Remittent F. the same office reported 8 deaths in the same period. The average duration of life after ins. was 6 years 1 month; the average expec. 30·07; the per-centage of total mort. 61.

1862.—Dr. Charles Murchison, M.D., LL.D., F.R.S., pub. *A Treatise on the Continued Fevers of Gt. Brit.* Dr. Farr says of this work [25th Rep. Reg.-Gen. p. 175]:

> Dr. Murchison's treatise on Continued F. is the ablest monograph on any disease that has recently appeared in Europe; combining as it does masterly powers of exposition, learning reminding us of Haller, accurate observation, and great powers of analysis. If it were in the hands of every practitioner, all the forms of F. could not fail to be distinguished in the registers; and the great problem of fevers might be solved by the combined obs. of all the best English observers.

Dr. Farr has embodied some of the leading results contained in this work in his Letter to the Reg.-Gen. in the 25th Rep., which we next proceed to notice. We shall speak of Dr. Murchison's work in more direct form under date 1873, when the 2nd ed. was pub.

Dr. Farr, in the 25th Rep. of the Reg.-Gen., reviewing the deaths of 1862, says: Fevers have hitherto been confounded together; but many of the practitioners of the country can now distinguish the three forms, *Typhus*, *Typhia*, *Typhinia*, which Dr. Jenner and other writers have designated by the name of Typhus, and of the descriptive but not unobjectionable names of typhoid F. and relapsing F. All the continued fevers in 1862 killed 18,721 people in E. and W. . . . Never disappearing, they have killed 17,076 persons a year since 1850; and the mort. has ranged from 10·41 in 1852 to 6·63 deaths by F. in 10,000 inhabitants during the year 1860; since when these diseases have been growing more prevalent, and last year (1862) were fatal to 9·3 in 1000. He adds: *Fevers strike down young men and women in the prime of life, and are therefore, like consumption, the more deplorable in their results.* He also adds:

> Typhus and typhoid F. (*typhia*) belong to that class of zymotic diseases that attack men once as a general rule, so that those who survive enjoy afterwards a certain immunity. Hence it follows that the attacks are much more numerous at the age 15-25 than at the age 25-35, because the susceptible pop. is proportionally greater at the first age than at the second. The deaths at the ages 15-25 and 25-35 were 3092 and 1928. But it does not follow that the number of cases was in that proportion, as the mort. in these F. varies at different ages. Our statistics are at present imperfect, as they give no return of the total number of cases of F. of the various forms, but an approximation to the numbers can be obtained, and will serve to show to some extent the ravages of this devastating malady.

Reviewing the returns of the Lond. F. Hospital for the 10 years 1848–57, Dr. Farr remarks: If the mort. of cases of F. in the country at large is truly represented by that of the Lond. F. Hospital, then 3189 died out of 32,952 attacked of ages 15–25, and 1898 died out of 12,317 persons attacked by F. at the ages 25–35. The same calculation is applicable to the deaths at other ages, and hence it may be inferred that at least 152,653 persons were attacked every year, and 17,491 died of these fevers. He adds: *In this great ann. battle* 17,491 *Englishmen were killed, and* 135,162 *were severely wounded, but ultimately recovered!*

He considers that the mort. of severe F. hospital cases is probably twice as great as the mort. of cases out of hospital. "The F. itself subsides earlier, but the sickness which follows its complications protracts the duration of cases, which on an average of 152,653 cases imply about a month's sickness in each." The average F. pop. during the 10 years 1848–57 was 12,721. They would fill 127 hospitals, each containing 100 beds, and require more than 4,643,000 days' subsistence. About 56,784 cases and 8901 deaths occurred among men and women of the age 15 and under 65, and in their illness 1,703,520 days of suffering were experienced, and 1,460,160 working days were lost.

He (Dr. Farr) next reviews the results of Dr. Murchison's investigations, as set forth in the work already quoted. Children and aged people are not often treated in F. hospitals, "so that Dr. Murchison supplies no facts respecting infants, and few facts respecting children of 5–15, or old people of the age 65 and upwards." But it is evident that the mort. is lowest at the age 10–15, and rapidly increases as age advances: "observing a very regular law of increase, from which the mort. at one age between 15 and 55 being given, the mort. at any other age within that limit can be calculated." Dr. Farr gives the annexed example of the observed and calculated rates.

Age.	Observed.	Calculated.
15–25	9·67	9·77
25–35	15·41	15·44
35–45	24·63	24·40
45–55	38·20	38·57

"The mean ann. increase of the death-rate is 4·7 p.c. for each year of age." He continues:

> It appears to be estab. that patients are not liable to a second attack, either of typhus or of typhia, but that relapsing F. often recurs; and typhus follows typhia, as typhia follows typhus: both being as independent of each other as smallpox and measles. This being so, it is evident that as age advances, the proportion of people susceptible declines, and we find that the calculated average liability of people to attack decreases, until at the age 45-55 the minimum liability is attained, and then only 20 in 10,000, or 2 in 1000—1 ann. in 500—experience attack. At the age 35-45 the proportional number of attacks among 10,000 persons is 25·93; at 25-35 it is 43·30; at 15-25 it is 93·20. The facts do not justify us in proceeding further towards infancy, but they seem to imply that in childhood the liability to invasion from greater susceptibility rather than from greater exposure to it causes a maximum proportion of attacks. We have then greater liability to attack in early manhood, conjoined with greater power of resisting the disease, so that the final result is an equal rate of mort. among the pop. at the ages extending from 25 to 45: for 6·67 died out of 10,000 living at the age of 25-35, and 6·63 died out of the same number living at the next age 35-45. The higher rate of mort., 9·02 at the ages 15-25, is prob. connected in some way with the migration from the country to the towns, where the new-comers are exposed to stronger forms of the zymotic exciter.

Finally:

> Typhus and Famine F. (typhinia), like the pythogenic F. (typhia), are lit up by a specific zymotic matter, which is generated whenever human beings are badly fed, and are crowded together dirty in an inadequate supply of fresh air. These two forms of F. fluctuate in intensity as the operation of their causes does, and give rise to the great spreading epidemics which follow war and famine, and afflict the world.

Dr. J. G. Fleming, in his *Medical Sta. of L. Assu.*, 1862, based mainly on the mort. exp. of the *Scottish Amicable* from 1826 to 1860, says:

> In regard to F., from which the largest number of the deaths in this class [*zymotic*] occur, we find the proportion to be considerably greater among the assu. than the general community. The deaths from this disease to the lives at risk in the *Gotha and Scottish Amicable* combined being ·202 against ·095, the deaths in the general pop.—or rather more than double; and of the 12,243 deaths among the assu., 1156 were ascribed to F.: being 9·45 p.c., against 6·11 in Eng., or fully a half more. This is a result for which certainly I was not prepared; and is quite at variance with the commonly received opinions as to the causes which give rise to F., and the class of society who are most liable to it; and does not easily admit of explanation. I have examined the Reg.-Gen. Rep. for a number of years, and am satisfied that 10,869 represents a fair average of the ann. deaths from F. between 15 and 75 years of age, including epidemic years, so that there is no ground for assuming that the epidemic influence was greater during the periods over which the mort. among the assu. extended than during the average of the 7 years from which the mort. among the general pop. has been taken.

The following T. is given in illustration:

Ages.	No. of Deaths from Fever.			Per-centage of Deaths from Fever.									
				On Lives at Risk.			On Deaths from all Causes.						
	England average of 7 years 1848-54.	*Gotha So.*	*Scottish Amicable.*	*England.*	*Gotha So.*	*Scottish Amicable.*	*England.*	*Gotha So.*	*Scottish Amicable.*	*Scottish Widows.*	*Standard.*	*North Brit.*	*Equitable So.*
15—25	3522	1	6	·103	·081	·255	12·21	25·00	35·29				
25—35	2131	33	11	·077	·176	·075	7·39	22·00	9·82				
35—45	1617	89	34	·077	·196	·175	5·96	17·97	16·34				
45—55	1388	86	13	·091	·212	·104	5·23	13·29	7·30				
55—65	1219	64	10	·120	·299	·176	4·02	8·91	7·24				
65—75	992	32	5	·171	·553	·266	2·73	7·07	4·16				
Total	10,869	305	79	·095	·229	·140	6·11	12·36	10·21	7·28	7·76	7·82	9·79

He continues:

> Age is well known to exercise a marked lethal influence in F. The mort. from the F. in this country increases in a very decided manner as age advances. This is well illustrated by the division of the T. showing the mort. on the lives at risk, where the per-centage of deaths, excluding those under 25, increases steadily with age. That the young are greatly more liable to F. than the adult is plainly shown in the division exhibiting the per-centage on deaths from all causes, where, at the early ages, F. appears to have been very fatal; but this is only in comparison with all other diseases at those ages, and demonstrates its great frequency as a disease in youth, but not its proportionate mort. to the number attacked. The deductions to be drawn from the two divisions of the T. are quite in accordance with the well-known medical facts, *that of an equal number of individuals attacked with F. in early life*, and in middle or well-advanced life, a much smaller proportion will die among the former than the latter; and also that the young are immensely more liable to the disease than the adult or aged. Were all ages equally subject to this disease as the young, the mort. from it would be dreadful.

Looking for corroboration as to the effect of age in increasing the mort. from F., he found it in the returns of 54,893 cases of various types of the disease treated in the hospitals by the district surgeons of Glasgow. Of the above number 36,620, or 67 p.c. of those attacked, were under 30 years of age: the deaths among these were 1951, or 5·3 p.c.; while above 30, the number attacked was 18,273, the deaths being 2383, or 13·04 p.c. He proceeds:

> On an analysis of the proportion of the pop. at different ages in Eng. between 15 and 75, I find that 30 p.c. is between 15 and 25, and 70 p.c. above 25; while in the *Gotha* 99, and in the *Scottish Amicable* 96 p.c. are above 25. Or in round numbers one-fourth more of the pop. of these assu. sos.

> is above 25, than of the gen. community; and consequently this add. number is exposed to the risks of those diseases which are more fatal to advanced than young lives; and it having been shown that F. is one of these, the extra mort. from this disease among the assured is to some extent accounted for. Prob. also the classes of society from which the members of assu. corp. are obtained are not so much exposed to the causes, and do not suffer to the same amount from F. among their young as the gen. pop., and a larger proportion of them may be attacked by the disease at a more mature age; *besides, there are good grounds for the opinion that F. is a more fatal malady among those who enjoy the comforts and indulge in the luxuries of life, than among those whose means command little more than its necessities, or those who are rarely free from its privations.*

Coming more particularly to the deaths from F. in the *Scottish Amicable* So., we are told that all the Continued F. of this country, including Typhus, Typhoid, Low Nervous, Gastric, Enteric, and Bilious, were included in the 79 recorded cases. But besides these there were 8 deaths from F. in the tropics—making 87 deaths in all, or 11·25 of the total mort., and 58 p.c. of the deaths of the zymotic class. Then some further details of interest from an ins. point of view :

> Of the 79 which occurred in the U.K. 30 were returned as Typhus, and this I believe to be under the actual number, as several are simply termed F. which from the shortness of their duration I have no doubt were of this type. Eleven of these 79 are stated in their proposal papers to have previously had the disease; and of the 8 lives which fell from fever abroad, 7 were reported to have suffered from it in the tropics previous to acceptance. This is to some extent a corroboration of the opinion that in certain constitutions there is a tendency to febrile diseases. On the other hand, the question of how far, having passed through an attack of certain fever, Typhus for instance, gives an immunity from that disease, is a point of practical importance, and if conceded, should in so far enhance the value of such a life. Typhus F. is now classed by most physicians among the exanthemata; is considered to be characterized by a distinct eruption, and like the Eruptive F. to occur only once in life: in which opinion from considerable opportunities of obs. I fully concur. The circumstance of F. being much more common among the young than the middle-aged, also tends to support this opinion.
>
> *From what has been shown as to the extra mort. from F. among the assured, and bearing in mind that it is a disease to which the healthy and vigorous are liable, and that medical science affords little or no aid in detecting who are most likely to be its victims, it must be expected, particularly during epidemics, to fall heavily on life assu. bus.*

He gives the following case, not simply as illustrating the benefits of life ins., but the rather to show how long the contagious poison of typhus may lurk in the system before the decided symptoms of the disease are developed :

> A gentleman who had been for many years ins. in the *Scottish Amicable* applied for an add. pol. On examination he was found free from disease, and in regard to his bodily health quite eligible; but there was a depression and anxiety in his countenance, manner, and conversation, which I considered to be satisfactorily accounted for when he mentioned that he was in deep distress from the death of his wife from F. the previous week. The proposal was accepted. This occurred on the Wednesday; he attended to his bus. as usual till the end of the week, and was at church on Sunday, on the evening of which day he had a shivering fit, followed by feverish symptoms, but went out on Monday, after which Typhus F. intervened, and he died within a fortnight.

1864.—Scotland had a fever epidemic. Dr. Stark, in the 10th Detailed Rep. of the Scottish Reg.-Gen., reviewing the deaths, explains that under the term Typhus were tabulated all the forms of Continued F., viz. Typhus (Spotted F.), Typhoid (Enteric, Gastro-Enteric, and Gastric F.), Relapsing F., Simple Continued F., and Febricula; as also that rarer and more fatal form known on the Continent as "Epidemic Brain Fever" or "Epidemic Cerebro-Spinal Meningitis," and he continues :

> We have not been able to spare time to abstract the deaths for all Scot. so as to exhibit the proportions in which each of these forms was present in the epidemic of 1864. In the 8 principal towns, however, of 2203 deaths tabulated under Typhus, 1450 were regis. as Typhus, 371 as Relapsing F., 216 as Gastric F., and 166 as Typhoid or Enteric F.
>
> Typhus, though never absent from the people, only now and then assumes the epidemic form; and when it does so, the Scottish records show that for at least a century and a half it has usually put on that type about the month of Oct., and continued for a period of nearly three years. During that period it has almost always been most prevalent and fatal during the coldest months, increasing with the fall of temperature, and becoming less prevalent and less fatal on the advent of the milder spring and summer weather. It also usually died out as an epidemic during the spring months.

The F. of 1864 first assumed the epidemic form in the months of Sept. and Oct. 1863; and it continued during the whole of 1864. As usual, it abated somewhat of its virulence and fatality during the warmer months of the year; but again increased with the lowering of the temperature, proving most prevalent and fatal when the weather was coldest. "In this respect it appeared to be regulated by the same laws which influenced other diseases." The deaths from all Scot. are not tabulated in such a form as to show the deaths from F. during each month, or the influence of seasons on its mort. Thus in Oct. 1863, there were regis. 129 deaths from F. in the 8 principal towns, 173 in Nov., and 176 in Dec. In Jan. 1864, there were regis. 183 deaths from F.; 206 in Feb.; 224 in March; 182 in April; 159 in May; 152 in June; 153 in July; 150 in Aug.; 155 in Sept.; 162 in Oct.; 233 in Nov.; and 244 in Dec. It affected the different towns differently: of every 1000 inhabitants of each town, it cut off 1·21 in Edin.; 1·45 in Leith; 1·68 in Dundee; 2·04 in Paisley; 2·78 in Glasgow; 3·27 in Perth; 3·59 in Aberdeen; and 6·15 in Greenock.

During its prevalence as an epidemic, Typhus proved more fatal to males than females, seeing that in every 1000 persons of each sex it cut off 169 males, but only 154 females.

The hospital statistics from all Scot. showed that about 12 p.c. of those affected with F. died, or 1 death in every 8 cases. "But (says Dr. Stark) as it is the more severe cases which are sent to be treated in hospitals, it is likely that in the gen. pop. only 8 p.c. of those who are affected die, or 1 death in every 12 cases."

1865.—Mann, in his *Medical Statistics of Life Assu.*, says: "Fever is a serious source of loss to assu. cos., not only by the number but the quality of the lives it destroys: the larger proportion of which are healthy, robust, youthful, and who but for this mischance might prob. have attained more than the average period of human life." The *British Empire* Mutual, of which Mr. Mann was for many years medical examiner, had in the first 10 years of its existence 19 deaths from Continued F.: 8 (6 males and 2 females) died between 20 and 30; 5 (males) between 30 and 40; 3 between 40 and 50 (2 males and 1 female); 3 (males) between 50 and 60. The average duration of the medical attendance in these cases was 16¼ days; 1 exceeded 30 days; 4 only exceeded 21. "In this small group of fatal F. cases (he continues) may be observed the prevalence of one feature, which distinguishes these forms of disease; namely, the greater susceptibility to F. poison of those who are in the prime of youth, or who seem to be at the acme of human health and strength." He adds:

> Although F. cannot be classed among hereditary diseases, yet in some families a more than ordinary susceptibility to this disease appears to be inherited. Thus, in one case which survived the attack only 14 days, and which occurred at 32 years of age, the mother died at 37 of F., and the father died abroad of the same disease at 35. It will be noticed that these deaths were not only at different dates, but at different places, and therefore originating in separate and distinct causes, or contagions.

1866.—Fever was the most fatal of the Zymotic class of diseases in Scot. this year, constituting 5·89 p.c. of the deaths, or proving fatal to 133 persons in every 100,000 of the pop. Dr. Stark in the 12th Detailed Rep. of the Scottish Reg.-Gen. says:

> By distinguishing the forms of F. some very interesting facts are brought to light. . . . Thus it appears that Typhus (or Spotted F.) was the leading form in the towns, seeing that 68·82 p.c. of the deaths from F. in the town districts were caused by Typhus, while only 22·79 p.c. were caused by Enteric F. In the mainland-rural districts, on the other hand, Enteric F. was the leading type, seeing that 49·69 p.c. of the F. deaths were caused by it, while only 37·27 p.c. of the deaths were caused by Typhus F. It is worthy of note, however, that all the recognized forms of F. were present and co-existed in both town and rural districts—a fact which leads us to infer that any one of these may become the leading type in any epidemic which may prevail, as has been witnessed in the various epidemics of F. which have ravaged the country during the last century and a half, during which period sometimes Typhus, sometimes Enteric F., sometimes Relapsing F., characterized the epidemic.

The next most fatal disease ofthe Zymotic class was Scarlet F., which carried off 2706 persons, of whom 1411 were males and 1295 females. It thus constituted 3·96 p.c. of the specified deaths; cutting off 89 persons in every 10,000 of the pop. This disease was proportionately far more fatal in the rural than in the town pop.; for while in the town districts only 3·58 p.c. of the deaths were caused by Scarlatina, it constituted 4·51 p.c. of the deaths in the mainland rural districts. The principal towns of Scot. were affected very differently by the disease; for while in Aberdeen the deaths by it constituted 6·18 p.c. of the mort., in Perth, Leith, and Edin. the deaths from it were considerably under 1 p.c. of the whole mort.

1867.—In Dec. of this year a remarkable outbreak of Typhoid F. occurred at the village of Terling, near Witham, in the County of Essex. Whole families were attacked and carried off with great rapidity. Dr. R. T. Thorne was sent down by the Privy Council to examine and report. The contamination of the drinking water turned out to be the cause. Mr. Alfred Haviland, in his paper *On the Haunts of Typhoid and other Fevers in E. and W.*, hereafter referred to [1872], offers the following valuable obs. hereon:

> Terling is the type of many a village and town in our country. Its porous gravelly drift formed an exception to the surrounding clay lands which remained uncovered, and being traversed by a rivulet like the Ter, became for two reasons an attractive site to the original settlers. The river consisted *then* of pure water, and the soil from its porosity rendered their dwellings dry, besides affording copious springs which flowed out in many directions in those localities where the clay and the drift were exposed.
>
> The drift was selected as a friendly soil, like the drift gravel on the banks of our own Thames, and would have continued to remain so, but man must needs heap his filth around his dwellings or in superficial pits, and then dig wells, for the sake of the water, which he finds so close at hand.
>
> The hist. of almost every outbreak of Typhoid F. tells us the same tale, and warns us that where these conditions exist, a heavy rain or a sudden thaw may at any moment, as in the case of Terling, poison a whole community within forty-eight hours.

1868.—Famine, or relapsing F. showed itself in Lond.

1869.—Mr. James B. Hutchins, of the Medical Department of the Privy Council, prepared a memorandum of precautions to be taken in regard to Relapsing F., of which we have given the main features under FAMINE FEVER.

1871.—In a paper by Dr, T. Graham Balfour, M.D., F.R.S., read before the Sta. So. 1871: *Comparative Health of Seamen and Soldiers as shown by the Naval and Military Sta. Reps.*, we find the following: *Eruptive* F. were four times as prevalent and fatal in the navy as in the army: chiefly from the occurrence of smallpox in 1860, 1861, 1862, and 1868; and also, though to a much less extent, from measles in 1864, and scarlet fever in 1863 and 1864. *Intermittent* F. was more prevalent in the navy than the army, the sailors being more exposed to malaria in cruising about the shores of the Mediterranean than the soldiers quartered in Gibraltar and Malta. During the period 1830-36 the proportion of cases of intermittent F. was very much higher in both services, but particularly in the army. *Remittent and continued* F. were more than twice as prevalent and nearly twice as fatal in the army as in the navy. This was chiefly due to the great prevalence of F. at Malta in several years of the decade, particularly in 1859, 1860, 1867, and 1868, when the ratio of admissions ranged from 206 to 229, and of deaths from 3·86 to 8·85 per 1000 of the strength. The disease was of local origin, depending in a great measure on defective sewerage, especially at St. Elmo, insufficient ventilation, and overcrowding of the barracks. Compared with the results for the 7 years 1830–6, there had been a slight reduction in the ratio of admissions to hospital, but a slight increase in the deaths by the two last-named fevers, as is shown by the following T.:

Remittent and Continued Fevers.	Ratio per 1000 of Mean Strength.			
	1830-36.		**1859-68.**	
	Admitted.	Died.	Admitted.	Died.
Naval Force	77·9	1·40	64·1	1·62
Military ,,	161·6	2·53	137·6	2·99

1872.—Mr. Alfred Haviland read before the National Asso. for Promoting Social Science a paper: *On the Haunts of Typhoid and other Fevers in E. and W.*, wherein the author says: During the 10 years 1851-60 there died of, and were regis. under the head of typhus and other fevers in E. and W., 84,121 males, and 88,337 females; total, 172,458—of whom 17,730 males and 18,052 females succumbed to these preventible diseases under the tender age of *five* years! The average ann. rate of mort. from these causes was 9·1 to every 10,000 persons living. He sets out 6 degrees of mort. as follows:

1° 16 and upwards to every 10,000 living.
2° 13 ,, 15 ,, ,, ,,
3° 10 ,, 12 ,, ,, ,,
4° 9 ,, 7 ,, ,, ,,
5° 4 ,, 6 ,, ,, ,,
6° 1 ,, 3 ,, ,, ,,

Adding: "It is a noteworthy fact that in every district in the country *some* deaths were regis. during the time. This I have found not to be the case in either scarlet F. or small-pox, in the distribution of which there occurred some places entirely free from their ravages." He proceeds:

> Two facts I will notice at once: first, the mort. in the *coal districts*. If you will carry your eye over the large geological chart before you, and then compare the black spots indicating coal-fields with the blue groups on the fever map, you will find a wonderful correspondence. 1° We have observed the high mort. group of Northumberland; 2° the Lancashire and Yorkshire Black Country comes next, with its well-defined high mort. group; 3° the Nottinghamshire and Derby group; 4° the Atherstone and Wolverhampton; 5° the great coal and iron district of South Wales; and lastly, the coal district in the neighbourhood of Bristol. All are characterized by high mort., and we shall not have to seek far for social causes to account for it; but the question arises, is the excess of mort. entirely dependent on them? Are there not other conditions at work which possibly ought to be taken into account?
>
> The next fact is, that the districts near the sea-coast in the northern counties have a mort. which we must all consider high in a preventible disease, viz. that of the fourth degree, or from 7 to 9 to every 10,000 persons living. Let us carry our eye around the coast-line of E. and W., and the remarkable fact presents itself to us, that the districts bordering on the sea have, with few exceptions, a mort. from 7 to 9 per 10,000. The most noteworthy exception is really in the midst of the Newcastle coal-field; the second at Flamborough Head; the third on the east coast; the fourth in Hampshire; the fifth and sixth in Cornwall and Devon, the largest group; the sixth in Anglesea; and the seventh in Cumberland.
>
> The next low mort. group, of the fifth degree, takes up a large portion of the country, and embraces a triangular area, extending from Sheffield to Montgomery, in Wales, in one direction, and to Gloucester in another. We all know what an elevated part of the country this is; that it is well watered with an abundant rainfall; that the Severn which traverses it is a rapid river; that the formation consists of the Silurian, the Old Devonian, and the New Red Sandstone; that the water-bearing strata are deep; and that superficial wells, except in rare instances, do not obtain within it.

He then specially reverts to Northamptonshire "as a specimen of a high mort. county," and proceeds, with great minuteness, to examine into the causes thereof. Here we cannot accompany him. He finally arrives at the following general conclusions:

> 1. That an elevated part of country, having an abundant rainfall, and a watershed of hard absorbent rocks, such as some of the primary formations, the Carboniferous Limestone and Millstone-grit, which afford a good natural drainage, through which the meteoric waters flow in torrential streams, pure, forcible, and quick, and beneath which the spring water has to be sought at a considerable depth, are conditions opposed to the development of the typhoid poison.
>
> 2. That the opposite set of conditions, low margins to the catchment basins, a corresponding scanty rainfall, a gently sloping and absorbent watershed terminating in a flat district through which the rivers wind their way in a sluggish course; when the springs are mostly superficial, being derived from an absorbent soil overlying one of a tenacious character, like clay, and easily admitting not only of the percolation of rain, but every soluble matter that may be lying on the surface at the time of its fall [are favourable to the development of typhoid poison].
>
> 3. That the parts most exposed to the direct influence of the sea and the winds, and even inland localities, are liable, when the mouths of main drains are partially open, during the ebb of the tide, whether in rivers, as in the Thames, or on the sea-coast, to have their sewer gases forced back into the houses, or into the streets through gullies, producing, especially during the night and early morning, when the vital powers are at their lowest ebb and the body fatigued, the most pernicious effects.

He adds:

> After this simple outline, I think it will be evident that the study of the geographical distribution of disease is the only true mode of becoming acquainted with these conditions, and the only safe guide in all our legislation intended to mitigate the evils arising from this and many other diseases, which owe their spread to similar conditions; and in all our designs for the disposal of sewage by attending to its teachings, many of the fatal errors already contracted in great drainage works and in model sewage farms would be avoided.

Dr. F. J. Mouat, M.D., read before the Sta. So. of Lond., 1872, a paper: *On Prison Discipline and Statistics in Lower Bengal*, wherein occurs the following passage:

> A very destructive form of F. has, however, ravaged Lower Bengal for some years past, and is still in active operation in some districts. Upon the subject of this F. I was at issue with the Sanitary Commission, who considered it prob. that it had its origin in a specific poison promulgated from man to man; that it was not due to any sanitary conditions, however unfavourable; and that it was prob. of the same type as the contagious F. of the North-West Provinces and of the Punjaub. Persons labouring under it were very frequently imprisoned in Bengal, but in no single instance did it spread in any gaol to which it found admission. It was always amenable to the action of quinine when properly administered, and some hundreds of cases which I saw outside the prisons presented all the characters of a genuine malarious F. I believe it to be caused by the great geological change now in progress in the Delta of the Ganges, which has temporarily intercepted the natural drainage of large tracts of country; and that it will continue until the great rivers and their chief affluents have found new channels to the sea, and the drainage is restored to its normal state. Two former capitals of Bengal were depopulated and abandoned from devastating outbreaks of a similar F., when the rivers on which they were built abandoned their channels.

1873.—Dr. Murchison pub. the 2nd ed. of his able *Treatise on the Continued Fevers of Gt. Brit.* While the Sta. T. in his first ed. (1862) were based upon 6703 cases of Continued F. admitted into the Lond. F. Hospital during the 10 years 1848–57, those in the present ed. are based upon 28,863 cases admitted during 23 years 1848–70, "comprising, in fact, the entire medical hist. of the F. Hospital from the time that the different Continued F. were first distinguished in 1848, until, from the transfer of the pauper patients to the new F. Hospitals in 1871, the exp. of the F. Hospital ceased to be any test of the prevalence of F. in the metropolis." He estimates "that during the last 30 years" the Continued F. had destroyed 530,000 of the pop. of E. and W., and 71,335 of that of Lond. alone. "The actual number of persons attacked, represented by this mort., has prob. amounted to between five and six millions in E. and W., and to about 750,000 in Lond."

He classifies the Continued F., "according to our present knowledge," as follows: A. NON-SPECIFIC: I. *Simple* F., caused by exposure to sun, fatigue, surfeit, etc. B. SPECIFIC: II. *Endemic* (enteric, typhoid, or pythogenic), caused by poison contained in drinking water, emanations from sewers, etc.; III. and IV. *Epidemic*, embracing (1) Typhus F., caused by contagion, or the concentrated exhalations from squalid human beings; (2) Relapsing F., caused by contagion or famine. "The plurality of Continued F. is now generally admitted, and is advocated in this work." "There are still some writers who believe that the F. mentioned are mere varieties, and all spring from one poison." He then deals in consecutive order with Typhus, Relapsing, Enteric, and Simple Continued F. in a most exhaustive manner.

Speaking first of *Typhus*, he shows that *sex* has no predisposing tendency towards it—the proportion of males and females attacked over a series of years being about equal. [FEMALE LIFE, 1873.] Regarding *age*, he says:

> Typhus is for the most part a disease of adult age: although no period of life is exempt from it. The records of the Lond. F. Hospital show that it may occur at every age from 1 month to 84 years. The mean age of 3456 cases admitted into the Lond. F. Hospital during 10 years (1848–57) I ascertained to be 29·33 years, which is about 3 years above the mean age of the total pop.

The following T. gives the number of cases admitted into the Lond. F. Hospital in each quinquennial period of life during 23 years, 1848–70.

Typhus Fever—Age and Sex.

Age.	No. of Cases.			Per-centage at each Period of Life.
	Males.	Females.	Total.	
Under 5 years...	112	122	234	1·29
From 5 to 9 years	579	617	1196	6·59
,, 10 ,, 14 ,, ...	1058	1131	2189	12·06
,, 15 ,, 19 ,, ...	1546	1386	2932	16·16
,, 20 ,, 24 ,, ...	1304	1096	2400	13·23
,, 25 ,, 29 ,, ...	866	861	1727	9·52
,, 30 ,, 34 ,, ...	728	790	1518	8·36
,, 35 ,, 39 ,, ...	627	831	1458	8·03
,, 40 ,, 44 ,, ...	673	834	1507	8·30
,, 45 ,, 49 ,, ...	481	558	1039	5·72
,, 50 ,, 54 ,, ...	363	427	790	4·35
,, 55 ,, 59 ,, ...	196	245	441	2·42
,, 60 ,, 64 ,, ...	198	202	400	2·20
,, 65 ,, 69 ,, ...	90	98	188	1·03
,, 70 ,, 74 ,, ...	34	50	84	·46
,, 75 ,, 79 ,, ...	14	18	32	·17
Above 80 years	2	1	3	·01
Age doubtful	75	55	130	...
Total (omitting doubtful cases)	8871	9267	18,138	99·90

From this T. it appears that the two most common lustra for typhus have been between 15 and 20, and 20 and 25; and that one-half of the cases (9248) occurred between 10 and 30. More than two-fifths (41·14 p.c.) of the cases were 30 and upwards, and more than one-tenth (10·68 p.c.) were 50 and upwards, while less than one-fifth (19·95 p.c.) were under 15. "Two circumstances also must be borne in mind, showing that the liability to typhus after 30 is even greater than it appears to be from the T. 1. The total number of the pop. above 30 years of age is very much less than of that below. 2. In many persons above 30 the liability to typhus is removed by the fact of their having already had the disease." It is noticeable that at the period of life at which typhus is most common (in the T.), viz. between 15 and 25, the number of males considerably exceeded that of females, whereas between 25 and 30 the sexes were equally affected; and throughout the rest of life the females much exceeded the males. Another circumstance to be noted is that the number of patients between 40 and 45 exceeded that of the previous lustrum, and that the excess was mainly in the male sex. Dr. Murchison here remarks:

> The fact that adult age is so prone to typhus involves important social and moral consequences. The disease attacks and destroys the heads of families, at that period of life when they have children dependent upon their industry for support; and hence it is often a cause of widowhood and orphanage, and therefore of pauperism and demoralization.

Regarding the months and *seasons* of the year most congenial to typhus, we are told that its epidemics "appear to commence and progress irrespective of season, so long as other known causes of the disease remain in operation." This conclusion is stated to be confirmed by a careful comparison of the most authentic records of different epidemics. It has usually been observed both in Lond. and elsewhere that in a protracted epidemic there has been a diminution of the disease in summer and autumn, to be followed by an increase on the approach, and especially after the persistence, of cold weather. In those periods when typhus was not epidemic in Lond., the few cases met with occurred mostly in spring, and in autumn the disease entirely disappeared. The ordinary variations in temperature have in themselves, in this climate, very little influence over the prevalence of typhus.

Regarding *Occupation* we find the following:

> No occupations in themselves predispose to typhus, except those involving actual exposure to the poison. In the 1st ed. of this work a T. was given showing the occupation of 5095 fever patients admitted into the Lond. Fever Hospital, but it was thought unnecessary to reproduce it, as many of the patients, although belonging to some trade, had been out of employment for weeks or months prior to their seizure. *Butchers* are said by Dr. Twedie to be particularly exempt from typhus. The statement is prob. correct, and the fact is accounted for by the circumstance that butchers have usually a good supply of nourishing food. Most of the butchers admitted with typhus into the Lond. Fever Hospital had been out of employment and destitute for some time before their illness. [BUTCHERS.]

It is observed that "no peculiarity of constitution exempts from typhus, though some persons are more prone to it than others." In the Fever Hospitals of Lond. and Glasgow it has been found that all the nurses not protected by previous attack contract typhus within 3 or 4 months of entering on their duties—some sooner than others. All brought in contact, including the doctors, are sooner or later attacked. "Some persons have a peculiar aptitude for typhus."

Under intemperance we find the following:

> Habitual intemperance deranges digestion, impairs nutrition, causes derangement of the excreting organs, retards the elimination of carbonic acid and urea, and lowers the tone of the nervous system. It is not surprising that under such circumstances the body becomes more susceptible of the poison of typhus. It was shown by Craigie and Davidson *that more than one-half the patients admitted with typhus into the Edinburgh and Glasgow infirmaries had led intemperate lives.*
>
> A single act of intoxication may also predispose to typhus. I have known several instances of persons exposed for months to the poison in its most concentrated form, who were not attacked until immediately after a debauch. *There is no greater error than to imagine that a liberal allowance of alcoholic stimulants fortifies the system against contagious diseases.*

Bodily fatigue, want of sleep, or whatever lowers the vital energies, and exhausts and debilitates the body, predisposes to typhus. *Mental fatigue and depressing emotions* have an undoubted influence in rendering the body less liable to resist the poison of typhus; while cheerfulness and confidence have a contrary effect. "Of the predisposing causes included under this head perhaps none is more powerful than a dread of the disease." Previous ailments predispose to typhus. Next we come to *Overcrowding*:

> Overcrowding of human beings, with deficient ventilation, is one of the most powerful predisposing causes of typhus. Admitting that typhus is propagated by emanations from the sick, it is obvious that its propagation must be favoured by the concentration of these emanations. All the historians of the great epidemics of typhus testify to the intimate connexion between its prevalence and overcrowding. The following T. . . . constructed from the regis. of the Lond. Fever Hospital shows the localities of the metropolis from which 26,380 cases of F. were derived during 22 years (1848-69), as well as the area and pop. of the district. [We do not reproduce the T] . . . It will be noticed that the typhus cases have come for the most part from the central and most crowded localities, and that on approaching more suburban districts their proportion gradually diminishes. Unfortunately, no district of the metropolis is entirely exempt from overcrowding, otherwise the contrast would be more striking. In Edin., where there is a greater separation between the overcrowded dwellings of the poor and the houses of the better class than perhaps in any other city, typhus, even in the midst of the greatest epidemics, is almost restricted to the most crowded and wretched parts of the old town. Again, in the country districts of Eng. typhus is a rare disease; almost all the examples of typhus reported as occurring in small country towns and villages are really cases of Enteric F.

Under *Recent Residence in an Infected Locality*, we find the following:

It has long been known that the poison of Enteric Fever operates more readily on persons who have but recently been subjected to its influence, than on those who are habituated to it: it is doubtful if this character applies to typhus. The nurses and attendants on the sick of typhus acquire no immunity from mere exposure, unless they have already had the disease; and there is no evidence that when typhus appears in a house, it selects the new comers by preference. On the other hand, prisoners living in the typhus atmosphere of jails have been known to convey the disease to strangers, while they themselves have escaped. In some epidemics, a considerable portion of the persons attacked have but recently arrived in the infected locality; but then they have either brought the disease with them, or they are predisposed to it by their destitute condition; or they propagate, or perhaps help to generate the poison by causing overcrowding.

Finally, of the predisposing causes, we reach *Destitution and Starvation;* and here we are told:

Destitution and deficient alimentation are the most powerful predisposing causes of typhus. The influence of poverty on the prevalence of typhus is borne out by the experience of the Lond. Fever Hospital. On investigating the condition in life of 18,268 typhus patients admitted during 23 years, it was ascertained that they belonged almost invariably to the lowest classes of the pop.; 95·76 p.c. being the inmates of workhouses or dependent upon parochial relief: whereas comparatively few of the better class of patients, such as gentlemen's servants, and persons able to pay for admission, were affected with typhus. And not only has this been so, but it has been constantly found that a large proportion of the typhus patients have been on the verge of starvation for several weeks or months prior to admission. Indeed in Lond. typhus is almost unknown among the middle and upper classes, save in a few isolated instances where there has been direct intercourse with the sick. . . .

From the historical account of typhus it appears that all the great epidemics which have devastated Ireland, Gt. Brit., and other parts of the world, have occurred during seasons of scarcity and want. [This last point we shall examine in our art. FOOD, and also under POVERTY.]

Dr. Murchison believes typhus to be contagious; and advances some convincing proofs in support of that belief; but he also believes it may have an independent origin. Although in a large proportion of cases of typhus, especially during epidemics, the specific poison is derived from persons previously infected, he believes it is equally true that it may be generated independently. "The conditions under which the poison is developed *de novo* are overcrowding of squalid human beings, and deficient ventilation: in other words, the poison is generated by the concentration of the exhalations from living beings, whose bodies and clothing are in a state of great filth." [FILTH DISEASES.] He furnishes many instances in support of this position.

We now reach the T. showing the mort. of Typhus; and here we are reminded that in calculating the mort. of F., the various classes are frequently mixed up. "It is obvious that if cases of Relapsing F., which are seldom fatal, and cases of Febricula, which always recover, be included with Typhus, the gross mort. will be much less than that of Typhus alone." The following T. are free from such objections.

T. showing the Mort. among the Cases of Typhus F. admitted into the Lond. Hospital, during 23 Years.

Years.	Admissions.	Deaths.	Mort. p.c.	Years.	Admissions.	Deaths.	Mort. p.c.
1848	526	107	20·34	1860	25	10	40·00
1849	154	39	25·16	1861	87	15	17·24
1850	130	24	18·46	1862	1827	369	20·19
1851	68	6	8·82	1863	1309	207	15·81
1852	204	24	11·76	1864	2493	439	17·61
1853	407	90	22·11	1865	1950	395	20·25
1854	337	68	20·18	1866	1760	342	19·43
1855	342	82	24·00	1867	1396	273	19·55
1856	1062	207	19·49	1868	1964	298	15·77
1857	274	69	25·18	1869	1259	255	20·25
1858	15	9	60·00	1870	631	113	17·90
1859	48	16	33·33				
Total					18,268	3457	18·92
Deducting 10 dead before reaching hospital and 308 who died within 24 hours...					17,950	3139	17·49
Deducting 368 add. who died within 48 hours...					17,582	2771	15·76

Thus, out of 18,268 cases of typhus, 3457 died, making a mort. of 18·92 p.c., or 1 in 5·28. But 10 of the patients were dead before reaching the hospital, and a large proportion were moribund on admission. Deducting 686 cases fatal within 48 hours, the mort. falls to 15·76 p.c. or 1 in 6·34. The mort. since 1862 has been less than it was before.

The death-rate, however, of typhus in a community attacked by it is much less than might be gathered from the statistics of the Lond. Fever Hospital. Many slight cases of the disease and many children attacked by it are never brought into hospital; and a large proportion of the patients in hospital have been the aged and infirm inmates of the metropolitan workhouses. "Making allowances for these sources of fallacy, the actual death-rate from typhus is prob. not more than 10 p.c."

The following T. shows the death-rate in other hospitals during the period indicated in each case. The name of the medical practitioner attached being he on whose authority the separate statistics are given:

Hospitals.	Cases.	Deaths.	Mort. p.c.
King's College Hospital 1840–58, Dr. Todd's cases	108	27	25·00
Edinburgh Infirmary 1847–8, Dr. W. Robertson	538	133	24·72
St. Bartholomew's Hospital 1860–7	518	127	24·52
Edinburgh Infirmary 1848–9	363	80	22·03
,, ,, 1847–8, Dr. Paterson	539	111	20·59
Greenock 1864	288	55	19·09
Belfast 1847, Dr. Reid	1366	258	18·88
Glasgow Royal Infirmary, 1843–53	9485	1700	17·92
Glasgow Barony Parish Fever Hospital 1847–8 ...	1370	236	17·23
Guy's Hospital 1862–5 and 1867–9	179	30	16·76
Glasgow Royal Infirmary 1857–69	11818	1828	15·46
Aberdeen Royal Infirmary 1863–9	2095	280	13·36
Glasgow City Fever Hospital 1865–70	5379	668	12·42
Dundee Infirmary 1858–70	5853	428	11·11
Cork Fever Hospital 1862–9	3504	335	9·56
Total	41,403	6296	15·26

In reading this T. we must however remember that *age* "exercises such a remarkable influence over the rate of mort. that no just comparison between the rates of mort. at different times and places can be made without taking into account the ages of the patients. The influence of age has indeed been made manifest in this art. Dr. Murchison indeed institutes a simple test, viz. that of comparing the mean age of those who recover with those who die. In the case of the Lond. Fever Hospital for the 10 years 1848–57 the result was as follows:

Total of cases in which the age was known	number	3456	mean age	29·33
Cases which recovered		2753	,,	26·15
Cases which died		703	,,	41·78

The more complete test is by determining the rate of mort. at each period of life. This is done by the following T., based upon the cases of the Lond. Fever Hospital during the 23 years 1848–70:

Age.	Males.			Females.			Total.		
	Admissions.	Deaths.	Mort. p.c.	Admissions.	Deaths.	Mort. p.c.	Admissions.	Deaths.	Mort. p.c.
Under 5 years	112	9	8·03	122	6	4·92	234	15	6·69
From 5 to 9 years	579	13	2·24	617	30	4·86	1196	43	3·59
,, 10 to 14 ,,	1058	17	1·60	1131	33	2·91	2189	50	2·28
,, 15 ,, 19 ,,	1546	72	4·65	1386	59	4·25	2932	131	4·46
,, 20 ,, 24 ,,	1304	144	11·04	1096	104	9·48	2400	248	10·33
,, 25 ,, 29 ,,	866	153	17·66	861	109	12·65	1727	262	15·17
,, 30 ,, 34 ,,	728	149	20·60	790	163	20·63	1518	312	20·55
,, 35 ,, 39 ,,	627	198	31·57	831	180	21·66	1458	378	25·92
,, 40 ,, 44 ,,	673	226	33·58	835	238	28·53	1507	464	30·79
,, 45 ,, 49 ,,	481	218	45·32	558	224	40·14	1039	442	42·54
,, 50 ,, 54 ,,	363	187	51·51	427	205	48·00	791	392	49·62
,, 55 ,, 59 ,,	196	109	55·61	245	129	52·65	441	238	53·96
,, 60 ,, 64 ,,	198	138	69·69	202	103	50·99	400	241	60·25
,, 65 ,, 69 ,,	90	78	86·66	98	64	65·30	188	142	75·53
,, 70 ,, 74 ,,	34	30	88·23	50	31	62·00	84	61	72·62
,, 75 ,, 79 ,,	14	12	85·71	18	15	83·33	32	27	84·37
80 years and upw.	2	2	100·00	1	1	100 00	3	3	100·00
Age doubtful	75	5	6·66	55	3	5·45	130	8	6·15
Total, including doubtful cases	8946	1760	19·67	9322	1697	18·20	18268	3457	18·92

Here we see that the mort. was somewhat greater during the 1st than during the 2nd decade of life—in this respect following the lines of an ordinary Mort. T.; at the later ages the mort. becomes very marked.

The following T. showing the influence of the seasons is very interesting. It is based upon the returns of the Lond. Fever Hospital during the 23 years 1848-70:

January...	Admissions	1976	Deaths	401	Mort. p.c.	20·29
February	,,	1621	,,	337	,,	20·78
March	,,	1906	,,	382	,,	20·04
April	,,	1642	,,	339	,,	20·64
May	,,	1525	,,	318	,,	20·85
June	,,	1296	,,	270	,,	20·83
July	,,	1251	,,	271	,,	21·66
August	,,	1183	,,	204	,,	17·24
September	,,	1162	,,	190	,,	16·35
October...	,,	1429	,,	222	,,	15·53
November	,,	1667	,,	259	,,	15·53
December	,,	1610	,,	264	,,	16·39
Spring	,,	5073	,,	1039	,,	20·48
Summer...	,,	3730	,,	745	,,	19·97
Autumn...	,,	4258	,,	671	,,	15·75
Winter	,,	5207	,,	1002	,,	19·24
Total	,,	18,268	,,	3457	,,	18·92

Here the mort. is seen to have been considerably less in the last 5 than in the first 7 months of the year. But as regards different years, the rate of mort. varied greatly, without any reference to the months and seasons. It has often been found that the mort. has been greatest at the commencement and height of great epidemics, and that it has declined as the number of cases has diminished. Taking nationality in the Lond. F. Hosp. cases, the mort. among the English was 15·94 p.c.; the Irish 16·20; the Scotch 18·88; foreigners generally 18·07. But the difference was prob. due to differences of age.

We have followed Dr. Murchison thus fully in regard to Typhus F. for several reasons, the chief being the importance of Typhoid over the other ordin. classes of F.; and next in view of the importance of the facts themselves. The author pursues the same elaborate investigation in regard to *Relapsing*, or Famine F.; the same as to *Enteric*, or Pythogenic F.; and the like as to *Simple Continued F.* or Febricula; while he minutely traces the specific distinctions between Typhus and Enteric F. In these inquiries we cannot follow him.

The following T., compiled from the returns of the Lond. Fever Hospital during the 23 years 1848-70, shows the results as to the next two classes of Continued F. in regard to their proportional frequency and mort.; subject to some deductions for those who died before reaching the Hospital and within 48 hours thereafter. Similar cols. for Simple Continued F. are not given; although they are included in subsequent T.:

Years.	Relapsing F.			Enteric F.			Years.
	Admissions.	Deaths.	Mort. p.c.	Admissions.	Deaths.	Mort. p.c.	
1848	13	1	7·69	152	41	26·97	1848
1849	30	...	0·00	138	26	18·84	1849
1850	32	2	6·25	137	24	17·51	1850
1851	256	7	2·73	234	30	12·82	1851
1852	88	1	1·13	140	25	17·85	1852
1853	16	...	0·00	212	59	27·83	1853
1854	5	...	...	228	42	18·42	1834
1855	1	...	...	217	28	12·90	1855
1856	...	...	...	149	23	15·43	1856
1857	...	...	...	214	30	14·02	1857
1858	...	...	...	180	26	14·44	1858
1859	...	...	...	176	34	19·31	1859
1860	...	...	...	95	27	24·42	1860
1861	...	...	...	161	32	19·87	1861
1862	...	...	...	220	30	13·63	1862
1863	...	...	...	174	25	14·36	1863
1864	...	...	...	253	52	20·55	1864
1865	...	...	...	523	103	19·69	1865
1866	...	...	...	582	101	17·35	1866
1867	...	...	...	380	53	13·94	1867
1868	3	...	...	459	72	15·68	1868
1869	768	17	2·21	369	58	15·71	1869
1870	903	11	1·21	595	93	15·63	1870
Total	2115	39	1·84	5988	1034	17·26	

The next T. shows the rate of mort. for the four chief classes of Continued F. combined.

Years.	Typhus.	Relapsing.	Enteric.	Febricula.	Total.	Deaths.	Mort. p.c.
1848	786	13	152	16	967	166	17·16
1849	154	30	138	79	401	65	16·21
1850	130	32	137	62	361	50	13·85
1851	68	256	234	56	614	43	7·00
1852	204	88	140	129	561	50	8·91
1853	407	16	212	152	787	149	18·93
1854	337	5	228	144	714	110	15·40
1855	342	1	217	62	622	110	17·68
856	1062	...	149	89	1300	230	17·69
857	274	...	214	72	560	99	17·67
858	15	...	180	44	239	35	14·64
859	48	...	176	36	260	50	19·23
860	25	...	95	33	153	37	24·18
1861	87	...	161	49	297	47	15·82
1862	1827	...	220	95	2142	399	18·62
1863	1309	...	174	46	1529	232	15·17
1864	2493	...	253	109	2855	491	17·19
1865	1950	...	523	172	2645	498	18·82
1866	1760	...	582	286	2628	443	16·85
1867	1396	...	380	223	1998	326	16·31
1868	1964	3	459	132	2558	370	14·46
1869	1259	768	369	53	2449	330	13·47
1870	631	903	595	94	2223	217	9·76
Total	18528	2115	5988	2232	28863	4547	15·75
Deducting 11 patients dead before reaching Hospital and 357 who died within 24 hours					28495	4179	14·66
Deducting 431 add. who died within 48 hours					28064	3748	13·35

The value of this last T. arises in the fact that, in the official returns of many hospitals, no distinction is made between the different fevers; and therefore no ground of comparison is furnished: this T. includes *all the cases of Continued F.* in the Lond. Fever Hospital, and so affords a ground of comparison with the entire mort. of other fever hospitals.

By this T. it is seen that out of 28,863 cases, 4547 died, giving a mort. of 15·75 p.c., or 1 in 6·34. Deducting the cases which were dead or moribund on admission, the mort. was 13·35 p.c., or 1 in 7·48.

The mort. from Continued F. in 14 other hospitals was collected by Dr. Murchison, and is here given in view of comparison:

Hospitals.	No. of Cases.	Deaths.	Mort. p.c.
Cork Fever Hospital, 1817-69...	92,230	3732	4·04
Dublin Fever Hospital, Cork Street, 1804-68... ...	190,681	13421	7·03
Royal Infirmary, Dundee, 1839-70	16,504	1315	7·96
,, ,, Bristol, 1840-57	1,890	179	9·47
,, ,, Aberdeen, 1840-69	11,784	1166	9·89
St. Thomas's Hospital, 1852-7	1,107	110	10·00
Seraphim Hospital, Stockholm, 1840-51	3,186	339	10·60
St. George's Hospital, 1851-6	911	103	11·30
Newcastle Fever Hospital, 1848-57	1,481	171	11·54
Royal Infirmary, Edinburgh, 1840-67	22,586	2622	11·61
City of Glasgow Fever Hospital, 1865-70	5,785	703	12·15
Royal Infirmary, Glasgow, 1840-69...	33,420	4250	12·71
Nottingham General Hospital, 1843-51	845	108	12·78
King's Coll. Hospital, Dr. Todd's cases, 1840-58...	328	60	18·29

We are told that the excess of mort. in the Lond. Fever Hospital is partly accounted for by the circumstance that a large proportion of the patients were the aged and the infirm inmates of the metropolitan workhouses. "The chief explanation, however, is to be found in the circumstance that no fewer than 24,516 of the 28,863 cases (or 84·94 p.c.) admitted into the Lond. Fever Hospital were examples of either Typhus or Enteric F." Hence:

It is obvious that in comparing the mort. from F. at different times and places, in order to judge of the merits of the different plans of treatment or for other purposes, it is absolutely necessary to take into account, not only the age and other circumstances of the patients, but also the species of F. which has prevailed. If this be not done, the comparison is of little worth. It is also necessary to

> have recourse to large numbers. Twelve successive cases of typhus terminating in recovery may appear a remarkable success; but if 5 out of the next 8 cases die, the total mort. is 20 p.c. When large numbers are employed, there is a striking equality in the rate of mort. at different places of each of the Continued F.

We regret that we can follow Dr. Murchison in his masterly treatise no longer.

1874.—Dr. Wm. Budd, M.D., F.R.S., of Clifton, pub. his able work: *Typhoid Fever; its Nature, Mode of Spreading, and Prevention.* The work had been printed in the preceding year; but the illness of the author delayed completion and pub. The work has deservedly received marked attention.

The theory advanced by Dr. Budd is that there is no such thing as the spontaneous generation of Typhoid F.; that the malady is propagated, as surely as smallpox is propagated, through a special virus, by contagion. He begins by developing his evidence on this head; he then fixes the principal seat of the contagious matter in the intestine; he examines the nature of the intestinal affection, the relation of Typhoid F. to defective sewerage, the character of the contagious agent, the employment of disinfectants and disinfection. He discusses the so-called "pythogenic" or putrescent theory, and winds up with some remarks on the spontaneous origin of Typhoid F. "The book (says Prof. Tyndall), from beginning to end, is one comprehensive argument, with reference to which it may be said that the facts alleged are of the most conclusive character; while the logic which binds them together is, as far as I can see, simply irresistible."

In the autumn of this year (1874) a serious outbreak of Typhus F. occurred at Over Darwen, a manufacturing town near Blackburn in Lancashire, with some 10,000 or 12,000 inhabitants. The circumstances attending this outbreak gave rise to considerable discussion on the specific origin of Typhoid F. The pith of the controversy, as stated by Prof. Tyndall, was this:—Can Typhoid F. be generated anew? Is it produced by the decomposition and putrefaction of animal and vegetable substances, or must the matter producing it have had previous contact with an infected body? In other words, for every new case of Typhoid F., may we with certainty infer a pre-existing case, of which the new one is merely the propagation or continuation, or are we entitled to conclude that organic matter, which has never been in contact with a typhoid patient, is, in virtue of its own decomposition, capable of starting the fever anew? Dr. Budd and his followers, including Prof. Tyndall, ranged on the one side: Dr. Lionel S. Beale and his followers on the other.

It will be instructive to note the views of Dr. Beale, which are especially illustrative of the Germ Theory of disease. We quote his letter in the *Times*, pub. 16 Nov. 1874, headed "Fever Germs," and purporting to deal with the nature and origin of fever-poisons:

> As regards the nature of the poison. That it grows and multiplies and increases its kind like other living things is now beyond dispute; but whether it is of the nature of a microscopic fungus originating without, or a living particle arising within, and from the living matter of man's body itself, there has been, is, and will be much difference of opinion. Some consider we owe to external nature the production of these disease-producing particles, and assign to them a place in the scale of living beings at least as definite as that held by every species of animal and vegetable parasite.
>
> I contend, on the other hand, that evidence preponderates in favour of the view that it is in our bodies these poisons are formed; that we human beings are alone responsible for their production, and for their maintenance and spread; that, therefore, a state of civilized society is conceivable in which fever germs would neither multiply nor arise, and, in the event of their being introduced *ab extra*, would themselves certainly perish, instead of damaging or destroying the higher life.
>
> Fever, as is well known, may, on the one hand, result from changes in the body, without any poison at all. In certain states of the system, a little not very soluble food will so disturb our nerve and blood changes as to cause the temperature of the body to rise from 98 degrees to 103 degrees, or even higher, and within a very few hours. General fever, too, soon follows upon a local injury, without any fever germs having been introduced. On the other hand, it has been proved that fever may result from the generation anew, within the body itself, of some poison, and also from the introduction of a poison which has been generated in the body of another. Not only so, but each particular or specific fever has its own special germ, which will induce that particular form of fever, and no other.
>
> What is the nature of the specific contagious fever germ which is so powerful for mischief? So inveterate is the deleterious agent in question, that no more cattle-plague, smallpox, or vaccine poison than is sufficient to moisten a pin's point will be more than enough to induce the disease. An equally minute portion of the poison of purulent ophthalmia from the eye of a suffering child is enough to develope the disease, if transferred to the eye of a child not infected. As minute a trace of the poison of certain forms of erysipelas, pyæmia, and of certain other febrile and inflammatory affections, if introduced beneath the skin by the slightest prick, or wafted in infinitesimal quantity in a current of air, will be sufficient to induce the disease.
>
> Now, such poison germs as those referred to have been produced—nay, some of them may at this very moment be coming into being under our very eyes, where crowded, uncleanly, and unventilated rooms supply the conditions required for their production. Some of us have long been studying these things, and by working carefully with very high magnifying powers at tissues in which the changes induced by fever germs had been effected, we have been able to learn much concerning the nature and origin of certain disease-carrying particles. I have shown that by the rapid growth and multiplication of the living matter of the healthy tissues, as occurs in every case of inflammation and fever, if it reaches a certain degree of intensity, morbid living matter results. By observing within the microscopic limit, in which the apparent size of an object may be increased to about 5000 diameters, I am unable to discern the origin of a disease-producing living particle. Arguing, then, from facts which have been estab. in the course of careful and prolonged investigations into the nature of these poisons, *I am led to the conclusion that all the fever-poisons of man and the higher animals are closely allied as regards their essential nature. All arise by degradation from the living matter of and in the body itself.* They are not microscopic fungi, nor are they derived from them; neither are they bodies which have been formed or evolved in the world outside. . . .
>
> It will be understood how, in accordance with the views above stated, fever-poison may be

produced, may originate in an organism which was entirely free from it—for fever germs probably do from time to time arise anew.

Outbreaks of fever occurring at different periods and in different places, though called by the same name, have been found to differ so much from one another that it would be more reasonable to refer some of them to a new fever-poison actually produced in persons residing in the locality than to attribute each outbreak to germs of the same kind imported from a distance and modified by the special circumstances of the place.

Fever germs will not be developed direct from filth; but by permitting people to live year after year in open defiance of well-known sanitary laws, the generation of fever-poison in their bodies is favoured, while its free growth and multiplication, if imported, is reduced to a certainty. It is therefore our aim to prevent people from falling into that condition of health which favours the organization and propagation of contagious fever-poisons in their bodies. Dr. Carpenter says in his letter to the *Times* of November 13, "prevent the introduction of those germs," and the disease will no longer arise. But, unfortunately, we cannot practically prevent the introduction of fever germs. At least all persons attending the sick will be freely exposed to invasion. Happily, they generally escape being hurt, for though the poison germs may have gained an entrance, if the body be not in a state favourable to their growth and multiplication they will die.

We may successfully and without fear contend with fever germs if only we preserve our healthy powers of resistance; and what we doctors are and have been striving with all our might to do is to prevent the bodies of our fellow-citizens from falling into a state favourable to the formation and to the growth and multiplication of fever-poisons. In many of our cities and towns and villages, it is to be feared, hundreds of organisms are slowly preparing themselves for invasion.

Bad air and sewage water, the adjacent dungheap, may be all perfectly free from fever germs, but nevertheless will certainly bring about changes which will render many of those exposed to their influence the ready victims of disease. While, therefore, it is desirable, by the use of disinfectants and by other means, to destroy existing fever germs with all possible speed, it is certainly of far higher importance, as regards the welfare of the people, that we should do our utmost to press upon authorities the necessity of providing pure water and efficient drainage wherever men congregate. Good water and well-arranged sewers render impossible such a calamity as that which we have now to deplore at Over Darwen. Even though the inhabitants of a town well drained and supplied with good water should be fully exposed to the assaults of hosts of fever germs in their highest state of morbid activity, they would suffer no injury.

There was printed in 1874: *The Causes of Death among the Assured of the Scottish Widows Fund Life Assu. So. from* 1867 *to* 1873 *inclusive. By J. Warburton Begbie, M.D., Medical Officer of the So.* The total deaths during the septennium were 1928, of which 69 resulted from fever—67 to males and 2 to females—under the following classes: Typhus 21, Typhoid 31, Senile 7, Gastric 1, Bilious 1, Continued 1, Remittent 2, Yellow 4, Jungle 1. Of the two females, one death was from Typhoid in New York, the other from Gastric at Tain, in Ross-shire, Scot. Regarding the occupation of the males who died from Typhus, they were very varied: there were 3 butchers, 2 medical men, 2 solicitors, 2 farmers, 1 city missionary, 1 clergyman, 1 grocer, 1 stockbroker, 1 merchant, etc. As to the age, there was one between 20 and 30, 5 between 30 and 40, 5 between 40 and 50, 5 between 50 and 60, 3 between 60 and 70, and 2 between 70 and 80. As to the occupations of those who died from Typhoid or Enteric F., 5 were independent gentlemen, 4 clerks in offices, 3 solicitors, 3 clergymen, 2 farmers, 2 drapers, 1 commercial traveller, 1 banker, 1 merchant, etc. As to age, 4 occurred between 20 and 30, 12 between 30 and 40, 3 between 40 and 50, 3 between 50 and 60, 4 between 60 and 70, 3 between 70 and 80, and 2 above 80.

1875.—The various reports of the medical officer of the Privy Council, 1st and 2nd series, contain much valuable information regarding F., especially as regards the more minute details of specific outbreaks. No. 2 of the 2nd series, recently issued, contains an able art. on "Filth Diseases and their Removal," from the pen of the chief officer, Mr. Simon, which has a very important bearing on Fever. We shall speak of it in some detail under its title.

Dr. W. B. Richardson, F.R.S., read a paper before the So. of Medical Officers of Health, entitled, *Some New Researches on the Cause and Origin of Fever from the Action of the Septinous Poisons.* This was really a continuation of a paper read before the same So. in 1865; but it will be convenient to notice the results together. In his first communication he had shown from a series of experiments made with the serous fluids derived from a patient suffering with pyæmic fever, and under the care of Mr. Spencer Wells, that such fluid, when inoculated into healthy animals, produced a distinct and fatal disease, which could be transmitted to other animals through several series or generations. To the poisonous matter thus produced he had given the name of *Septine*, and he had laid before the So. specimens of salts obtained from the septinous matter, viz. a hydrochlorate and a sulphate, both of which possessed poisonous properties similar to those belonging to the mother liquor. He had inferred, therefore, that the poisonous substance was of an alkaloidal character.

He had also stated the following conclusions as the result of his experimental researches: 1. All the organic disease-producing poisons are modified, *i.e.* poisonous secretions. 2. The secretions are rendered poisonous by two processes—(*a*) by contact with organic poison pre-existing; (*b*) by direct decomposition. 3. The poison of each secretion possesses several qualities; it can only be absorbed by particular channels, and it only provokes further disease by coming in contact with a secretion allied to that from which it was itself derived. 4. The reproduction of the poisons depends on the continuance of the process of physical changes in continuous secretion. The force of secretion is the force of reproduction. 5. The poisons kill by various means—(*a*) by the secretion causing obstruction of necessary function; (*b*) by exhaustion from excessive secretion; (*c*) by extreme irritation of nerve and reflex injury ; (*d*) by the absorption of the poisoned secretion into the blood, and disorganization.

From this point Dr. Richardson went on to describe that since the announcement of the facts respecting septine had orig. been put forward, similar results had been obtained by Coze, Felz, Devaine, Behier, Vulpian, and MM. Thin and Clementi. It had been further discovered by Devaine that the intensity of the poisonous matter increased in the most marked degree, and in a manner that seemed to defy computation, with the transmission of the poison through fresh series of animals.

He, too, had proceeded with his investigation, of which he gave the details. He had put to himself the question, "Why does the poisonous septinous matter produce a definite order of morbid symptoms, and why, specially, does it produce fever?" Without entering into details which were negative, he found, he said, one affirmative fact from his experiments, from which he should base to-night *a new theory on the cause of the fever and other symptoms that occur in the living animal under the influence of septine.* He found that it was the property of all the septinous poisons to liberate oxygen from that solution of oxygen known as peroxide of hydrogen. This fact was illustrated by showing the action of minute portions of pyæmic poison, vaccine, pus, decomposing blood, and other similar bodies. The septinous matter in every form seemed from its action upon peroxide to have been derived either from fibrine, or from cellular tissue, or from derivations of these bodies.

After adding some other experimental facts, and summing up the results of all the facts he had placed before the So., Dr. Richardson stated the theory at which he had arrived as to the effects of the septinous matter on the living organism, with special reference to the febrile state. *The theory was that the septinous product acts upon the blood in the extreme circulation, when it has accumulated in sufficient quantity, by liberating a portion of the oxygen.* Upon this occur the same phenomena as had now been observed in experiment ; but as the poisonous organic product is itself destroyed in the process, the effects it produces may remit until a new charge of the poison has been produced in sufficient quantity to cause a repetition of the febrile state. Thus the theory suggests a simple reason for the remittency of fever.

The various phases of febrile disturbances were next adverted to. It was indicated that in some instances, as in the most malignant forms of smallpox, the blood may be so charged with septinous matter as to be unable to take in oxygen in the process of respiration ; then death takes place by asphyxia, after a brief period of febrile heat. In another variety of cases the liberation of the oxygen is so persistent that remission of the fever is hardly perceptible ; and in other exceedingly light cases, where the quantity of poison is very small, and is not reproduced, one sharp paroxysm of febrile phenomena may be all that is witnessed.—Condensed from *Sanitary Record.*

By way of further contribution to medical statistics, we have constructed a chronological table of fever visitations in various parts of the world.

A.D.	
759	*Ireland*—The *Teascha*, an epidemic of dysentery lasting for 20 years, during which occurred the first *Lamhchomart*, or the great Lamentation.
1078	*Ireland*—A pestilence, prob. Typhus F., lasted 13 years.
1224-5	*Ireland*—F. again, prob. Typhus, "through which towns were emptied without leaving a person in them ; but few recovered."
1350	*England; Holland; Ireland*—A sore disease; "its infallible signs were a great fever."
1391	*Ireland*—A pestilence, prob. Typhus.
1404-6	*Ireland*—The *Galar na Leabthan*. Many diseases; and the kingdom abounded with fevers. *England*—Plague.
1498	*Spain*—It is stated that 17,000 of the troops of Ferdinand, then besieging Granada, were destroyed by a F.
1505	*Italy*—Contagious and fatal F.
1528	*Italy*—Typhus F.
1534-9	*Europe*—Fevers throughout ; in *Ireland* for 4 or 5 years.
1550-54	*Tuscany*—Season of scarcity. Petechial F. destroyed upwards of 100,000 people.
1557	*France*—Typhus F. Coyttarus of Poitiers describes it in his work : *De Febribus purpuratis.*
1566	*Hungary.*—The great *Morbus Hungaricus.*
1575	*Ireland*—*Feidhm*, or epidemic pestilence ; probably Typhus.
1580	*Verona.*—Epidemic Typhus ; described by Petrus a Castro, 1584.
1591	*Italy*—Extensive epidemic of contagious F. described by Octavius Roboretus of Trent, in his work *De Peticulari Febre.*
1621	*Bavaria ; Germany*—Epidemic of Typhus, which became known as "Bohemian Disease."
1630-40	*France*—Of which Joannes Morellius pub. an account: *De Febre purpurata, epidemia et pestilenti in Burgundiam.*
1635	*Holland*—Petechial F.; described by Diemerbroeck, 1646.
1641	*England ; Ireland ; France*—Malignant F. (Typhus), very common.
1643	*England*—*Febris pestilens* in the Parliamentary and opposing army.

1658-9	*England*—Morton says this F. "converted the whole island into one vast hospital." H. Whitmore pub. *Febris Anomala, or the new disease that now rageth throughout England.*
1665	*England*—The Great Plague of London, preceded and succeeded by epidemic of continued malignant F.
1682	*Ireland*—A fatal petechial F., "which greatly affected the brain and nervous system," prevailed chiefly in Dublin.
1688	*England; Ireland*—A fever began in Lond. in May, and spread all over England : in July it reached Ireland.
1689-90	*Ireland*—F. very violent in North of Ireland; every house affected.
1698	*England*—Fatal Spotted F. began to prevail.
1700	*Germany*—Typhus among the troops; described by Hoffmann as "Febris Petechialis vera."
1706-8	*Ireland*—Epidemic F. at Cork. Described by Rogers, 1734.
1718-19	*England; France, etc.; Ireland*—Putrid, remittent and intermittent F. In *Ireland* for several following years; same as in Cork 1706-8.
1727-9	*England*—E. Strother pub. *Practical Obs. on the Epidemic F. of Three Years.*
1728	*Ireland*—Famine F.
1729-30	*England*—Relapsing F. W. Cockburn pub. *The Danger of Improving Physic, with account of the present Epidemic Fever.*
1731	*England; Ireland*—Military and Epidemic F. in Eng.; in *Dublin*, F. "mild and deceitful" in its first attack.
1732	*London*—See our art. under this date.
1733	*Ireland*—F. at Carrickfergus.
1734	*Ireland*—Low F. and ague (especially in the winter); also nervous and petechial F.
1735	*America; England; Scotland*—Yellow F. in America: Erysipelatous F. in Eng.; Spotted F. in Scot.
1735-6	*Ireland*—F., rheumatic pains supervened in those who survived. In January, 1736, it became epidemic and petechial.
1739	*Ireland*—Infested with Relapsing F. July to October.
1740	*Germany; Spain; England; and Ireland*—Epidemic F. in Germany; Yellow F. in Spain; F. in Eng.; and in Ireland Continued F., especially among the lower classes in August.
1741	*England; Ireland; West Indies*—Bristol and Lond. suffered from malignant F.; in Dublin, Cork, and Galway. Yellow F. in the West Indies. Daniel Cox pub. *Obs. on the Epidemic F. of* 1741; Wall, in his *Medical Tracts*, Oxford, 1780, has one on the *Epidemic Fever of* 1740-2.
1745	*Ireland*—In Dublin in August.
1746-8	*Holland*—Dr. James Grainger pub. [Edin. 1753] *Historia Febris anomalæ Batavæ* 1746-8, *et Monita Siphylica*; and in 1785: *Ueber die Behandlung der halten Fieber, besonders ueber das anomalische niederlandische Fieber* 1746-8, *und die Influenza* 1782.
1754	*Ireland*—Petechial F. prevailed.
1757-8	*Ireland*—F. of a low and putrid kind prevalent; in March, 1758, very rife and mortal.
1757-9	*Vienna*—Dr. Joannes G. Hasenhöhrl pub. in Vienna: *Historia morbi epidemici sive febris petechialis* 1757-9, *Viennæ gressatæ.*
1761-2	*Ireland*—Low, putrid, or nervous F. throughout the year; the petechial F. among the soldiers. In June, 1762, putrid bilious F.; in Nov. great increase in malignity and numbers.
1764	*Naples*—Dr. Joannes Viventius pub. in Naples: *De Cicuta; acced. de Neapolitana Epidemica febre*, 1764.
1767	*Scotland*—Dr. John Gilchrist pub. in Edin. 1774: *De Febre anomala inter Dumfrisienses Epidemica*, 1767.
1771	*Bohemia; Ireland*—A fatal epidemic disease destroyed 168,000 persons in Bohemia. In Ireland, early in the summer, a F. began to appear, and as autumn advanced raged with violence, especially in marshy districts.
1771-2	*Erfurt*—Dr. J. C. Oettinger pub. in Erfurt, 1772: *De Febribus* 1771-2 *Erfordiæ epidemica grassantibus.*
1776	*London*—Dr. Wm. Grant pub. 1777: *Account of the Fever and Sore Throat in London, Sept.* 1776.
1777	*England*—Relapsing Fever at Newcastle, Dr. John Clark describes it (1800).
1778	*Senegal*—Dr. J. P. Schotte pub. in Lond. 1782: *Treatise on the Synochus atrabiliosa, a contagious fever at Senegal in* 1778.
1781	*England*—Epidemic Typhus, described by Dr. Heysham.
1784	*England*—Dr. P. Kenny pub. 1785: *Account of a Contagious F. at Aylesbury.*
1786	*Ireland*—F. at Cork and Limerick.
1789-90	*England*—In Dr. John Ferriar's *Medical Histories and Reflections*, Lond. 1810-13, will be found an account of the F. in Manchester in these years.

1792	*Ireland*—F. at Cork and Limerick again.
1797-81	*England*—Relapsing F. in various places.
1798	*America ; Ireland*—A wide-spread F. in America ; in Ireland prevalent in the spring ; spread "to a frightful extent" in the summer.
1799	*Ireland ; America*—F. in Ireland assumed a most malignant type. Yellow F. in New York. Epidemic Typhus at *Genoa.*
1800	*Spain ; America ; Ireland*—Malignant epidemic F. at Cadiz ; Yellow Fever at Seville ; also through U. States ; contagious F. in Ireland, troops suffered.
1801	*England ; Ireland ; Spain*—F. in England and Ireland generally ; alarming at Belfast. Yellow F. in Spain.
1804	*Ireland*—Epidemic of dangerous type ; mort. considerable ; Fever Hospital opened at Cork and Dublin.
1809	*Walcheren*—F. amongst the British troops.
1809-11	*Hindostan*—In 1816 there was pub. in Lond. : *Rep. on Epidemic F. in Coimbatore, Madura, etc.*, 1809-11.
1810-11	*Ireland*—F., typhoid or pestilential.
1812	*Spain*—F. in the peninsula.
1813	*England ; Ireland*—Typhus in Lond. ; also through Ireland.
1814	*Ireland*—F. had continued from 1812.
1815-16	*England ; Ireland*—Typhoid in Lond. ; very general throughout Ireland.
1817	*Italy ; Poland ; Ireland*—F. resembling Typhus in Italy and Poland ; great spread of fever in Ireland. Yellow F. at Havannah.
1817-19	*Ireland*—F. very severe in Ireland ; between 1st Sept. 1817, and 31st Aug. 1819, 42,068 cases admitted to Dublin Fever Hospitals. "The most formidable epidemic F. which has visited Ireland for nearly a century." Dr. John Crawford pub. in Edin. *De quibusdam Febris Epidemicæ varietatibus*, 1817-19. Several treatises pub. in Ireland, viz. by Barker, Cheyne, Barry, Crampton, Harty.
1818-19	*England*—Dr. Thos. Bateman pub. 1818 : *Account of the Contagious F. of this Country ;* Dr. Henry Clutterbuck pub. 1819 : *Obs. on the Prevention and Treatment of the Epidemic F. prevailing in the Metropolis, etc.* (1819); Dr. J. H. Dickson pub. in Bristol, 1819 : *Obs. on the Prevalence of Fever.*
1820	*Ireland*—F. malignant and fatal in June.
1821	*America ; France ; Spain ; Ireland*—F. and Yellow Pestilence in America ; Military F. in Departments of Ouse and Seine, France ; Yellow F. in Spain ; Typhus prevailed in parts of Ireland.
1822	*Ireland ; America*—Malignant Typhus in the west of Ireland ; also dysentery. Yellow F. in New York.
1823	*Ireland ; England*—Increase of typhus in Dublin ; F. in North of England.
1824	*Ireland*—Alarming increase of F. in Limerick and Dublin. "Mort. as high as 1 in 8" of cases !
1825	*Ireland*—Admissions in Cork Street F. Hospital, Dublin, 4353 : 1 in 10 died.
1826	*Ireland ; Scotland*—"Most extensive F." in Ireland, of two descriptions, ordinary protracted typhus ; and short F. with frequent relapses. In Edin. Typhus ; mort. 1 in 8.
1827	*England ; Holland ; Belgium ; West Indies*—Yellow F. in U.S.
1828	*Trinidad*—Dr. Wm. Stevens pub. 1832 : *Obs. on the Healthy and Diseased Properties of the Blood ;* wherein was an account of this F., and reply to W. Hacket.
1830	*Europe*—Gastric F. prevailed very generally.
1831	*Ireland*—Typhus in an aggravated form among distressed peasantry.
1833	*Ireland*—Epidemic F. in Tipperary.
1834-6	*Ireland*—Considerable admissions to Dublin Fever Hospital. Dr. Henry Kennedy, in his *Account of the Epidemic of Scarlatina in Dublin from* 1834 *to* 1842, notices this outbreak.
1836	*Scotland*—Typhus in Glasgow. Fever in Edin.
1837	*Ireland ; Scotland*—In Dublin F. Hospital 11,085 patients were treated ; mort. 1 in 10. In Glasgow mort. 1 in 10.
1838	*England*—Fever extensive ; see art. this date.
1838-9	*Scotland*—See Dr. John Reid's *Researches*, pub. 1848.
1840	*Ireland*—F. of bad type prevalent ; great mort. among medical men.
1841	*England ; Ireland*—Black F. at York ; highly malignant F. in S. E. of Ireland.
1842	*India ; Ireland*—Troops in India attacked with F. In N. W. of Ireland. See James O. McWilliams' *Med. Hist. of the Expedition to the Niger during 1841-2 ; and the F. which led to its abrupt termination.*
1843-4	*Ireland ; Scotland ; England*—Dr. John Rose Cormack pub. 1843 : *Natural Hist., Pathology and Treatment of the Epidemic F. in Edin. and other Towns.* Dr. J. R. Wardell pub. 1848 : *The Scotch Epidemic F. of* 1843-4 ; *its Hist., Pathology and Treatment.*
1844	*America*—Relapsing F. in Philadelphia.

1845 6	*England; Ireland; Scotland*—Typhus in Liverpool; Gastro-Purpuric F. in Ireland. Fever in various parts of Eng. and Scot.
1847	*America; France; Silesia; England*—Very severe in Ireland during famine; emigrant ships carried it to New York.
1848-51	*Ireland*—F. still continued in fluctuating degrees in Ireland.
1856	*London*—Typhus F. prevailed to a considerable extent.
1861	*London*—Typhus again prevailed.
1862	*England; Scotland*—F. in the cotton manufacturing districts from destitution.
1863-4	*India*—In many of the prisons of the Punjab.
1865	*England; Russia*—Fever prevailed to a considerable extent. "Great Russian pestilence."
1866	*Scotland*—F. very prevalent. See art. under this date.
1867	*Germany*—Relapsing F. in East Prussia; and in Silesia.
1868	*England*—Relapsing or Famine F. showed itself in Lond.; but was prob. stopped by timely measures.
1869	*America*—Philadelphia and N. York, among poor Irish and German emigrants.
1872	*England*—Relapsing F. again prevalent.

The preceding T. cannot be considered in any degree complete. It is compiled from such sources as we have at command. We had to draw especially upon the Rep. of the Irish Census Commissioners, 1851. In fact, a complete T. of visitations would, we suspect, constitute something like a complete hist. of mankind, civilized and uncivilized. The literature of the subject would constitute a considerable library. [BILLS OF MORT.] [CONTAGIOUS DISEASES.] [DEATH, CAUSES OF.] [DISEASE, DEVELOPMENT OF.] [DISEASE, GERM THEORY OF.] [INFECTIOUS DISEASES.] [ENDEMIC DISEASES.] [EPIDEMIC DISEASES.] [FAMINE FEVER.] [FILTH DISEASES.] [MORTALITY OBS.] [PESTILENCES.] [PLAGUES.] [PUBLIC HEALTH.] [SICKNESS.] [VITAL STATISTICS.] [ZYMOTIC DISEASES.]

FEVER, DEATHS FROM.—The following T. from the 34th Rep. of Reg.-Gen. give the latest statistics of deaths from Fever in E. and W.:

T. *of Deaths from Fever—Typhus, Typhia, and Typhinia—to* 10,000 *Persons living, and Proportional Number to* 1000 *Deaths, in the* 22 *Years* 1850–71.

Years.	Number of Deaths registered.	Deaths to 10,000 Persons living.*	Proportional Number to 1000 Deaths.	Years.	Number of Deaths registered.	Deaths to 10,000 Persons living.*	Proportional Number to 1000 Deaths.
1850	15,374	8·66	43	1862	18,721	9·31	43
1851	17,930	10·15	46	1863	18,017	8·86	38
1852	18,641	10·41	47	1864	20,106	9·77	41
1853	18,554	10·25	45	1865	23,034	11·09	47
1854	18,893	10·28	44	1866	21,104	10·05	43
1855	16,470	8·89	39	1867	16,862	7·95	36
1856	16,182	8·60	42	1868	19,701	9·17	41
1857	19,016	9·97	46	1869	18,389	8·46	37
1858	17,883	9·28	40	1870	17,910	8·04	35
1859	15,877	8·14	36	1871	15,790	6·99	31
1860	13,012	6·63	31				
1861	15,440	7·76	36	Mean	17,859	9·03	40

* The mort. from F. here given includes a proportion of the mort. from causes not specified.

T. *of Deaths from Fever, at several groups of Ages, in the* 24 *Years* 1848-71.

AGES.	Deaths in 24 Years 1848-71.		Average Ann. Deaths, 1848-71.		Deaths in 1871.	
	Males.	Females.	Males.	Females.	Males.	Females.
All Ages ...	212,764	220,518	8865	9188	7817	7973
Under 5 years	41,792	42,597	1741	1775	1447	1544
5- ...	25,502	28,617	1063	1192	935	995
10- ...	16,833	21,096	701	879	682	783
15- ...	36,896	40,149	1537	1673	1439	1472
25- ...	23,834	24,062	993	1003	972	868
35- ...	19,724	19,049	822	794	687	716
45- ...	17,304	15,736	721	656	616	624
55- ...	14,982	13,715	624	571	522	473
65- ...	11,296	10,573	471	440	400	360
75 & upwards	4,601	4,924	192	205	117	138

FEVERS, Are they Contagious?—This simple question, which is one of considerable popular interest, involves a dire conflict of opinion among professional authorities. We have no intention of entering into the controversy further than to state briefly the views of each school. The reader will do well here to turn to our art. Contagious Diseases, after which he will understand better what follows:—

Dr. Wallis, Senior Physician of the Bristol Infirmary, writing to the *Bristol Journal* some years since, said:

> The common fevers of this country, including typhus fever, *have no contagious power whatever!* These are produced by malaria and depressed and unhealthy conditions of the digestive organs. Hence, a complete defence against these diseases is wholesome food, wholesome air, and cleanliness. Further, an inquiry has been instituted by the Gov., and a report has been made by the naval and military medical officers, upon the nature and causes of yellow fever, the most violent and fatal of all fevers; and these eminent men declare that the yellow fever is not contagious. The report was kindly sent to me by an officer of the Gov., and is now before me. *In our own Infirmary it is the constant practice to place the severest forms of fever indiscriminately among the other patients, and, although the beds are only two feet apart, no instance has ever been known of any fever affecting the occupant of the next bed.* No such infection of fever from one bed to the next has occurred within my memory, and it is upwards of forty years since I commenced my profession as a pupil in our Infirmary; and I then inquired of an old medical officer respecting this fact, and he declared that he had been forty years an officer of the house, and that no such occurrence had taken place in his time. Thus if fever will not affect another person who lies two feet apart once in eighty years, such an occurrence cannot reasonably be expected to happen at all. In short, wholesome food, cleanliness, and ventilation are all that is necessary for a defence against fevers.

The *British Medical Journal* for November, 1874, quotes the following passage from Dr. Murchison's *Continued Fevers of Gt. Brit.* (2nd ed. 1873) regarding the experience of the Lond. Fever Hospital: "During nine years, 3555 cases of enteric fever were treated in the same wards with 5144 patients not suffering from any specific fever. Not one of the latter contracted enteric fever, although it was not an uncommon practice for them to sit over the evacuations of enteric fever patients, and the use of disinfectants was quite exceptional;" and then proceeds:

> Private practice, again, yields like results. Dr. Murchison states that, at the date of the pub. of his work, it had been his lot to be consulted in upwards of fifty instances in which persons have contracted typhoid fever away from home and been brought home ill with it. In only two of the instances did fresh cases of fever appear in the houses into which it had been imported, and in neither was there crucial proof that the disease was communicated by the imported case. His experience on this point has been confirmed by that of other observers, and we believe that most physicians having a large consulting practice in fever, when asked as to the propriety of sending away the inmates of an infected house who are not themselves suffering from the fever, are chiefly influenced in their reply by the circumstance of the disease having been imported or indigenous, separation being considered advisable in the latter case, but not in the former. Two years ago typhoid fever appeared in a nunnery in the suburbs of Lond., sixteen of their patients being removed during their illness to their own homes, but in not one of the sixteen houses did the fever spread.

From the foregoing it might be reasonably inferred that Dr. Murchison was a believer in the non-contagion of fevers; but turning to his work we find much of an entirely contrary tendency, of which, however, we shall quote but the two following brief passages. Under Relapsing or Famine F. he says: "That there is a poison in relapsing fever communicable from the sick to the healthy is proved beyond doubt by similar evidence to what has been adduced in the case of typhus." While under Enteric or Pythogenic F. he says: "*While it has been almost universally admitted that typhus and relapsing fever are eminently contagious,* many of the best authorities have entertained grave misgivings as to the communicability of enteric fever. . . In America and in Britain opinions have also been divided on the subject; but most observers now believe that although the disease is communicable in a limited degree, it is impossible in many cases to discover any source of contagion." While doctors thus disagree, it behoves ordinary people to take care of themselves. Besides, most fevers are regarded as *infectious* in a greater or less degree.

FEVERS, Fungoid Theory of the Origin of.—See Fungoid Theory of Contagious Diseases; and Parasitic Theory of Disease.

FIAR.—A term in Scotch Law, signifying the opposite of *Life* renter. The person in whom the property of an estate is vested, subject to the life renter's estate.

FIBRES.—See Vegetable Fibres and Grasses.

FICTIONS of Law.—In the English, as in the Roman Law, there are "those things which have no real essence in their own body, but are so accepted at law for especial purpose." The thing supposed to be is such as, being admitted to be a fact, gives to some person a right, or imposes on some person a duty. The fiction is always supposed to yield to the truth.

FIDELITY Guarantee So.—Projected in 1845, and prov. regis. with an authorized cap. of £100,000, in 5000 shares of £20. "Deposit 2*s.* p. share—being the largest deposit allowed by the Act of Parl. regulating joint-stock cos. previous to complete regis." The prosp. said;

> This So. has been estab. for the purpose of guaranteeing to gov. public offices, bankers, merchants, railway and other cos. and the trading community generally, the fidelity of parties employed by them in situations of trust and confidence.
>
> It must be admitted that the prosperity of all commercial undertakings mainly depends on the confidence which may be safely reposed by the principal in those whom he employs. To insure the honesty and fidelity of such persons, it is customary, in add. to an unexceptionable character, to require security to be given by responsible persons, for sums, always large in amount when compared with the salaries to be received, or when considered with reference to the station in life of the person by

> whom such security is to be provided; and not unfrequently the loss of valuable appointments is occasioned by the delicacy and reluctance felt in applying to private friends to enter into pecuniary obligations. and such applications have frequently been followed by the severance of friendship.
>
> It is thus that many young men of unblemished character are too frequently debarred from entering into situations of responsibility; and it is to provide a remedy for this evil that the *Fidelity Guarantee* So. has been estab. . . .
>
> The profitable nature of such bus. is clearly proved by the very small proportion of unfaithful clerks, and other confidential servants, out of the immense number of persons so employed in the metropolis, and other places throughout the kingdom. The statistics of crime pub. by authority prove the complete safety with which the fidelity of any given number of persons may be assured; they also prove that a very moderate rate of prem. would be amply sufficient, not only to protect the So. from loss, but, under a judicious system of management, to secure an ample profit to the shareholders.

The prosp. bore the name of Mr. J. W. Lawson, Sec. The scheme never matured under that title.

FIDELITY [GUARANTEE] INS.—This branch of bus., usually designated "Guarantee Ins." —but which title we discard as being indefinite, and therefore inappropriate,—embodies one of the most useful applications of the principle of Ins. with which we are familiar. It grapples with the operations of the human will; and while admitting the temptations, —which indeed constitute the necessity for the protection sought,—credits mankind with the restraining causes which exist against wrong-doing, and so arrives at a medium capable of almost precise estimate.

The origin of asso. for Fidelity Ins. has no doubt afforded food for reflection alike to moral philosophers as to jurists and social regenerators. It cannot be said, however, that the asso. have created an evil: they have but pointed to its existence, and, as we contend, improved the mode of dealing with it. We suspect indeed that the comparative publicity of their operations and the necessary severity of their regulations have indeed tended in the direction of enforcing "honesty" as the most convenient, if not as admittedly the best, policy.

The practical advantages of these asso. may be tersely stated under four heads. 1. They afford to all deserving persons facilities in obtaining occupations of responsibility and trust. 2. They encourage good character, by causing *that* alone to be the basis of suretiship, apart from the influence of private interest, family connexions, or pecuniary resources. 3. They relieve private individuals of the necessity of becoming sureties; from the consequent liability to loss; and from the mental anguish—often more serious that merely pecuniary loss—consequent thereon; also from the inconvenience attending the administration and distribution of estates without knowledge of impending liability of this character. 4. They offer to employers security of a tangible character, as distinct from the uncertainty which characterizes private suretiship by reason of death, insolvency, removal, and other incidents.

We propose now to trace the development of the bus. in Gt. Brit. in chronological order.

1720.—The first attempt at Fidelity Ins. appears to have originated during the South Sea mania. In the *Daily Post*, 10 June, 1720, appeared the following advertisement of the project, which we give *in extenso*:

Whereas notwithstanding the many excellent Laws now in force for punishing hired servants for Robbing their masters, or mistresses, yet noblemen as well as commoners are daily sufferers; and seldom a Sessions but great numbers are convicted, to the utter ruin of many families, as also a scandal to the Christian religion. This is to give notice that at the request of several house-keepers, Books will be open'd next Saturday at the Devil Tavern, Charing Cross, at 10 a clock, wherein any person may Subscribe, paying 6*d.* p.c. for a share call'd a £1000 stock; no more shares than 3000, and the call for a stock not to exceed 10*s.* p.c. the first year by quarterly payments. This So. will ins. to all masters and mistresses whatever loss they shall sustain by Theft from any servant that is Tick'd and Register'd in this So. As also to support such servants out of place that shall fall sick or lame, according to the articles to be laid before the managers when chosen.

N.B. Besides the Laws made in favour thereof, a petition is to be presented to His Majesty, for his Royal Letters Patent; which no doubt will be granted, and encouraged by all Noblemen, Gentlemen, and others; and be not only a So. to all masters and mistresses, but oblige servants to behave themselves respectfully to the masters; and also a support to such servants when sick or lame, for an inconsiderable charge.

Such was the scheme presented a century and a half ago; but almost directly afterwards the South Sea bubble burst, and all such projects were swept away.

It will be remembered that clerks, and all other persons holding positions of trust, and not themselves principals, were in the ordinary language of the period designated "Servants." But it is clear from the language of the promoters that the project did not attempt to reach the class of persons on whom Fidelity Guar. Asso. now depend for their bus., because such a class of persons did not then exist. The banks, ins. asso., monetary inst., and large trading firms, which now afford so many situations of trust, were not then in being—they are essentially creations of the present century. Besides, it is clear that the project just passed in review had no scientific basis whatever.

1840.—The possibility of an application of the principle of average to Fidelity Ins. was first suggested in the *Dublin Review* for Aug. 1840, in an able art. by the late Prof. De Morgan. The views contained in that paper pointed at the union of a given number of persons holding offices of trust for the purposes of mut. guarantee. If, for instance, 100 clerks were to unite together with this intention, it would be possible from an average of past experience to estab. such a rate of contribution from each member as would enable them to meet the losses which would arise by the fraud or dishonesty of any member of the so. within a specified time. The somewhat crude proposition of the learned Professor was: "The number of persons out of 1000, taken at hazard, who cannot resist a given temptation, would be found to be nearly the same as those of another 1000 who cannot resist it." From this germ the modern system has sprung.

In this same year was founded the first of the modern asso. especially estab. for carrying on the bus. of Fidelity Ins., viz. *The Guarantee So.* of London. An early prosp. contained the following:

> The Guarantee So. has been estab. to obviate the defects of the system of suretiship by private bondsmen, which is universally acknowledged to be attended with various inconveniences and objections; instances have constantly occurred in which persons of the highest respectability have been obliged to forego valuable appointments; from either the great difficulty of obtaining security, or a repugnance to place their relatives or friends and themselves under the obligations involved therein. The Guarantee So. undertakes, on the payment of a small prem. per cent. per ann., to make good in case of default by fraud or dishonesty, any losses which may be sustained to an amount specifically named and agreed upon in their pol., and by such means obviates the necessity for private sureties as well as the obligations arising therefrom, which often prove as prejudicial to the best interest of employers as to the party seeking guarantee.
>
> Rate of prem. 10*s.* per cent. per ann. and upwards (according to the nature of the employment) on the amount of security required.
>
> No charge is made for stamp duty except in special cases: the usual legal expenses of surety bonus will therefore be entirely avoided by persons who enter on their respective duties under the guarantee of this So.

The So. obtained the authority of a special Act of Parl. in 1842, under which date we shall notice its provisions.

The *British Guar. of Trust Co.* was projected during the same year, but did not mature.

Mr. Francis, in his *Annals, etc., of Life Assu.*, 1853, says:

> When this Co. was first started in 1840 for ins. against loss by the dishonesty of clerks, there was a great objection raised. It was thought one of those vague and speculative undertakings of which England has seen so many, and one which would necessarily fail, because the master would hesitate to take an assistant who could only give the security of a commercial co. "The moral security is wanting!" was the exclamation of all. It was vain to answer, that this objection pointed both ways, as the relative would often give the desired bond which a mercantile institution would refuse. Still the parrot reply was heard, and the solemn shake of the head was followed by "The moral security—where is the moral security?" and was deemed sufficient to crush all argument derived from mere statistics. Time passed, and it was discovered that because a banker's clerk gave the security of a co. he did not become a rogue, but he did become independent. It was found too that the master could make his claim good on the co. with far more promptitude than he could on a relative. It was nothing to say to a board of directors, "I will have justice and my bond," but it was something to say to a broken-hearted parent, "Your son has ruined you as well as himself—discharge your obligation!" It is well known that bankers and merchants have often foregone their due rather than thus reimburse their losses: and it has been found that notwithstanding the facts of the moral security being wanting, the sos. which guarantee the master from loss by the servant have been very successful and very serviceable, and are on the increase.

1842.—There was passed this year what is technically designated a private Act of Parl.—5 Vict. (Sess. 2) c. lxiv.—*An Act for regulating legal proceedings by or against "The Guarantee So.," and for granting certain powers thereto.* The majority of its provisions relate simply to the conduct of the bus. of that Asso. and will be noticed in its hist.; but. sec. xvi. enabled the Lords of the Treasury and the heads of Public Departments to accept the security of this So., and so gave it a public character. The clause recites an Act passed in the 50 Geo. III. c. 85, intituled—"An Act to regulate the taking of securities in all offices in respect of which security ought to be given, and for avoiding the grant of all such offices in the event of such security not being given within a time to be limited after the grant of such office," whereby it was enacted that every person who should after the passing of that Act be appointed to any office or employment, or commission civil or military in any public department in the U. K. or the Colonies, wherein he should be concerned in the collection, receipt, disbursement, or expenditure of any public moneys, was required to give security, as therein is provided; and reciting the further Acts 52 Geo. III. c. 66; 6 & 7 Wm. IV. c. 28; and 1 & 2 Vict. c. 61, enlarging and amending the provisions of the first-named Act, it proceeds:

> And it is expedient, as well for the greater ease of persons required to give security as aforesaid, as for the better securing the public interest, that further provisions should be made in this respect: Be it therefore enacted, That from and after the passing of this Act it shall and may be lawful to and for the Lord High Treasurer and Commissioners of the Treasury, or any three or more of them, or the principal officer or officers of any other public office or department in which any person or persons shall be required to give security by bond or otherwise, as mentioned in the before-recited Acts, or either of them, to make and accept if he or they shall think fit, in lieu of such bond or other security, the guarantee or security of the said Guarantee So., to be given and executed in and by their pol. or policies in the usual form of such pol. or policies, or in such other form and subject to such conditions as the said Lord High Treasurer or principal officer or officers of such office or department in which the said person or persons shall be appointed to such office or employment, shall require, approve and direct; and the same, when taken and accepted, shall be in lieu of the security required by the said recited Acts or any of them.

This was a very important public recognition of the uses of Fidelity Ins.

It may be well to state in this connexion that personal interviews were had by the founders of the Guarantee So. with the then Chancellor of the Exchequer, the Right Hon.

Henry Goulburn, as also with the preceding Chancellor, the Right Hon. F. T. Baring, at which the principles on which the bus. was founded were fully discussed; and upon this the preceding measure was approved.

The union of Life Ins. with Fidelity Ins. was suggested in the following manner: The *Brit. Surety* Co., projected in 1842 (while not itself intending to transact life bus.) proposed granting Fidelity pol. on more favourable terms to persons whose lives were insured, "with the view and hope of inducing parties to cultivate a habit of economy, and lay the foundation for a future provision." Hence the applicants for ins. were to be divided into two classes: 1. Those who contracted simply for a guarantee for their fidelity; they were charged according to a scale of prems. varying in ordinary cases from 10*s.* to 30*s.* p.c. 2. Those who contracted for a guarantee and were in possession of or effected a life pol.; for such persons the scale varied from 15*s.* to 40*s.*, of which one-half was to be applied for the surety, and the remaining half to be expended in prems. on a pol. for a principal sum payable at death, or at a certain age, or a deferred annu., at the option of the party insuring. The scheme did not mature.

1843.—Mr. Charles Saunderson, "late an auditor of the *Guarantee* So." (and for some years afterwards Deputy-Chairman of the So.), pub. a pamph.: *Suretiship. The Dangers and Defects of Private Security and their Remedy.* The writer, referring to the then practice of the asso., says:

> Upon the appointment of an individual to any office or duty involving pecuniary trust, or upon the death of a surety, provided the applicant be found a person of moral worth, the So. are willing to incur the risk of becoming his bondsmen: the individual contributing to the funds of the So. a small percentage proportionate to the amount proposed to be named in the surety bond. *This per-centage, however, is not calculated upon the degree of honesty he may be supposed to possess: if his reputation for strict integrity and morality present any blemish, he is rejected altogether.* Independently of the personal character of the individual, the So. is also guided by the nature of the engagement and the description of employment or bus. in which the bond or suretiship is required—the character of the referees and their connexion with the party—the check under which the person will be placed for whom the security is sought, and the evidence the So. may obtain that his conduct under these frequent and periodical checks will be observed by a wise and vigilant superior, and not abandoned to the common influences by which he may be surrounded. If the employer be careless or negligent, if he be generally known to be a person who does not exercise due caution in the protection of his own interests, by a strict supervision of the persons he employs, the So. declines to afford protection against the consequences to be expected from the defective arrangements of such an establishment; so that the character of the individual seeking guarantee is but one of many circumstances which would affect its decision.
>
> A second main principle adopted is to treat losses by suretiship as an ordinary risk, and to protect the funds of the So. upon the general principles applicable to ins., which are too well known to require a minute description: in all cases the individual who wishes to protect himself or others from any particular risk for which ins. exists pays a contribution into a general fund, smaller or greater in amount as the danger of loss increases or diminishes: and upon the occurrence of the casualty against which he provides, reimbursement is made from the general fund thus created.

He proceeds to say that there is much in the proceedings of such a so. which tends to diminish the risk of suretiship to all concerned—which view we entirely indorse. He states his propositions hereon as follows:

> In the discharge of trusts between parties united by daily friendly intercourse, there is a natural repugnance to allude to a deed providing security for their faithful performance, and proceeding on the assumption of the possibility of dishonesty in a friend, in whatever station of life he may be placed. The instrument therefore loses much of its controlling power and is less likely to prevent fraud, than if the existence of the bond was periodically impressed upon the minds of all parties.
>
> The ann. notice which the So. issues to the parties guaranteed and to their principal, supplies this defect; it reminds the one that holding the security of a bond, it is his duty to examine and balance periodically the accounts of the party guaranteed; and to the other, it recalls every year the remembrance of the obligation under which he is bound to a faithful discharge of the trust he has undertaken to perform. It imposes no burthen upon the principal, unless an ordinary attention to his own interests can be so regarded; and it requires from the servant nothing more than strict integrity of conduct. Not only therefore is a more complete security provided for the principal, but the So. encourages the growth of a high moral feeling in one of the most useful classes of the community—those entrusted with pecuniary transactions on account of others; and watches with vigilance any sign of the deficiency of such principles, or the existence of pernicious habits. So convinced have many principals of well-estab. firms become of the great practical value of the position taken by the Guarantee So. that they pay as a voluntary gift to the individual the amount of prem. required by the So. from the person who is the subject of the guarantee.

The pamph. then proceeds to point out several classes of occupations and employments in which the risk of Fidelity Ins. is great. It sums up generally under this head: "There are various other trades and professions that abound with temptation; and although the persons engaged therein receive very handsome pay and allowances, it has been found that in these trades the losses from dishonesty and fraud are proportionately high." It points to one advantage arising in actual experience. A firm charged one of its travellers with deficiency in his accounts. The So. insisted upon an examination of the accounts by way of proof. It turned out that there was no deficiency; but that on the contrary a sum was due from the firm to the traveller for services rendered.

The business in many of its details has been altered since this date; but its essential features remain the same. The conditions and stipulations of Fidelity pol. will be stated at the close of the present art.

1845.—There was founded—(1) in Edin. the *British Guarantee* Asso., of which we have already given the hist.; (2) in Glasgow, the *West of Scotland* Guarantee Asso.; while (3) there was projected in Lond. the *Fidelity Guarantee* So., of which we have already given an outline.

The *British Guarantee* Co. appeared to lay itself out to obtain the bus. of the various Gov. Departments, and in that view entered into correspondence with the Board of Trade, and submitted its scheme and form of pol. to that body for approval. As early as 26 May, 1845, the "Privy Council for Trade" expressed its opinion "that the regulations proposed by the So. appear to the Committee to be upon the whole satisfactory; and that the Committee did not perceive any reason why a proposal of the nature contemplated by the Guarantee So. should not be entertained, and favourably considered by the Gov." But it was only by the Treasury minute of 16 Feb. 1847, that the final approval was given. The Association had by that time obtained the authority of a Special Act of Parl. (9 & 10 Vict. c. ccclxxv. local). The Treasury minute said: "My Lords have before them the form of a pol. of guar. which has been approved of and settled by the law officers of the Crown, and which their Lordships' solicitor has reported to be the proper form to be used in all the public departments; and the same has been printed by the Asso., and copies thereof laid before this board." (See 1862.)

1847.—Mr. James Knight pub. a pamph: *Private and Public Guarantee for Persons appointed to Offices of Trust considered*, wherein occur the following passages:

> It has of late years become a customary stipulation by persons of all professions and trades, upon entering into partnership, that no member of the firm shall be permitted, upon any pretence or consideration, to become security for the fidelity of others: thereby preventing many well-disposed persons from placing themselves in the responsible position of bondsmen, even where the interests of a son or near and affectionate relative are at stake. Then again parents decline the responsibility, not from any indisposition to accede to, or disapproval of, the request; but from a conviction that by the acceptance of such a trust the interest of other near relatives might be exposed in subjecting so much of their reversionary property, not to actual loss, but to the possibility of it. Nothing could compensate the sufferers in such a case, because there is nothing which could justify it, and yet there is reason to believe that there are many instances in which the effect of defalcation is not duly considered until the event actually takes place. The private bond is only truly efficacious where parents or guardians, uninfluenced by other ties, assume to themselves the responsibility. In almost all other cases it is productive of feelings of recurring doubt and uneasiness, where there really may be no cause from any act of the assured. At the same time it is impossible to deny the elementary advantages of parents or guardians becoming surety, who, from being intimately acquainted with the habits, the education, and disposition of the assured, are best qualified to judge correctly of the nature of the trust. Without prejudicing the excellent motives which must necessarily actuate those who accept the responsibility, there is reason to believe that the system of private surety will in course of time cease to be one of the duties of life.

This prediction has been completely verified. He next proceeds to deal with the question as to how the plan he has just discussed was to be superseded; and says thereon:

> That principle which forms the basis of ins. on life is now introduced to guarantee for the faithful performance of the conduct of individuals holding offices of trust. A new impulse has therefore been awakened, and the adoption of public guarantee will be viewed as one of the great eras of civilization from the numerous beneficial auxiliaries which institutions so formed will afford to the community.

The writer subsequently considers whether it may not become the duty of directors of public undertakings to demand the security of guarantee asso. rather than private sureties—a state of things which has actually come about. It seems strange at this time that any special reasoning should have been necessary to enforce the advantages of Fidelity Ins.—but so it was.

Mr. W. E. Hillman, in his *Illustrations of the Theory and Practice of Assu.*, 1847, says, in answer to an inquiry made by himself to Mr. Dodgson, the then Sec. of the *Guarantee* So., whether their experience would illustrate the theory of prob., that gentleman observed that the Guarantee So. had "not yet sufficient experience to prove that the usual law of chances operates on moral as on ordinary objects of assu., but the *indications have decidedly that tendency*."

1849.—Mr. James Knight pub. another pamph.: *Public Guarantee and Private Suretiship;* wherein the writer enlarges upon the advantages which would result from "uniting the guarantee of a public co. with the well-known principles of life assu.," and demands for it the attention of all classes connected with the commercial interests of the country. "But to accomplish this it is required that the facilities which mathematical investigation has conferred on Life Assu. may be extended to ascertained data, regarding integrity of character, so as to secure reciprocal and economical advantages to their union." It is stated that Prof. De Morgan and Mr. Edward Ryley had entered into "an elaborate investigation" of the application of the two principles, "in order that the practical introduction of their union might not, on the one hand, be a matter of speculation, and, on the other, deficient in the fulfilment of the various and important benefits which it comprises."

In the same year was founded the *United Guarantee and Life Assu. Co.*, the prosp. of which said: "The main and distinguishing feature of this Co. is *the union of Guarantee for Fidelity with Assu. on Life* (including *Deferred Annu. and Endow.*). The *union* of the two principles of *Public Guarantee* with *Life Assu.* (as effected by the peculiar plan of this office) affords—(1) *To Employers, additional* security, by making the assured specially, and increasingly interested in their *own* good conduct, the value of the pol. and the consequent incentive to honesty increasing annually; and to (2) *The Employed or Assured,* a greater share of confidence from their employers, and independence to themselves, and materially relieve them from paying for the dishonesty of others. By the accumulation of profits on their pol., the assured will, if the bonuses of this Co. correspond with the experience of successful offices, eventually be reimbursed the whole of their Guarantee Prems. (3) *Simple Guarantees.*—Policies of Guarantee, *independently* of those for assu. on life, may be obtained upon the most favourable terms. (4) *Re-Guarantees.*— Private bondsmen may be relieved of their liability as sureties for the fidelity of others, upon either the *combined* system or *separately*."

This was the first instance of Fidelity Ins. and Life Ins. being combined in practice. The Co. in 1854 merged into the *People's Provident*, which afterwards became the *European* No. 2, and so was laid the foundation for the large Fidelity bus. carried on for some years by the last-named Co. (See 1852.)

In 1849 also were founded the *Times Life and Guarantee*; and the *Lond. Mut. Life and Guar.* So.; each of which issued combined Fidelity and Life pol.

1851.—The *United Service and General Assu.* Co. was founded, and issued Fidelity Guarantee and Life pol. combined.

The *National Guardian* founded this year had a Fidelity Ins. branch. (See 1861.)

1852.—There came before the English Court of Exchequer the case of *Benham* v. *United Guarantee and Life*, wherein the facts were as follow. The Co. granted a pol. to the Committee of a Literary Inst. guaranteeing it in respect of its Sec. to the amount agreed "against loss which might be occasioned by the want of integrity, honesty, or fidelity of W. in his employment as Sec. of the Inst." The basis of the contract was alleged to be a statement in writing [proposal form] by the treasurer of the Inst. lodged at the office of the Co., containing a declaration of the truth of the answers to certain questions. There was a proviso in the pol. that any fraudulent mis-statement or suppression in that declaration [proposal] should render the pol. void from the beginning. In the proposal were the following questions and answers.—1. Is the applicant at present in your employment, and if so, in what capacity, and has he hitherto performed the duties of his situation faithfully and to your satisfaction? *Ans.* He is Secretary to the Literary Inst. 2. Is the applicant personally known to you, or any of your firm, or by whom has he been introduced or recommended to you? *Ans.* Only as above. 3. In what capacity do you intend to employ the applicant; and with reference to this question state, as far as circumstances will permit, (*a*) the nature of his intended duties and responsibilities? *Ans.* He is Sec. of the Inst. of which I am Treasurer. . . . (*b*) The checks which will be used to secure accuracy in his accounts, and when and how often they will be balanced and closed? *Ans.* Examined by Finance Committee every fortnight. (*d*) The salary or emolument, and when it will be paid him, and how and when it will be paid? *Ans.* £80 a year at present. It was *held*, that the statement that the accounts of the Sec. would be examined once a fortnight by the finance committee of the Inst. did not amount to a warranty: and consequently that an action was maintainable on the pol. for a loss occasioned by his want of integrity in the service of the Inst., although such loss was occasioned by their neglecting to examine his accounts in the manner specified in the pol. All the Judges agreed that the answer as to examination of accounts was nothing more than a declaration of the course intended to be pursued, and if *bonâ fide* was not otherwise to be objected to. [7 Exch. 744.]

In the same year the following remarkable case arose—*Walker and others* v. *British Guar. Asso.* The Co. covenanted to guar. the plaintiffs, the Trustees of the Lancashire and Yorkshire Benefit Building So., against any loss that might be occasioned by the acts or defaults of J. Jones as treasurer of the said So. It was the duty of the said treasurer to pay over to the bankers of the So. to the credit of the trustees, all moneys within a short time after he received the same, viz. during the next day. On the 30 April, 1851, he received £170 on behalf of the So., which he had never paid to the account of the trustees. The fact was that after Jones had received the money, and before the time when he might or could have paid the money to the bankers, he, without any act or default, or any negligence or want of due and proper care on his part, was robbed by violence of the whole of the said moneys, by the same being feloniously and violently stolen and carried away from his person, whereby he was unavoidably, without any act or default of his, prevented from paying the said moneys to the bankers of the So. This was the plea set up by the Co. in defence of the action; and upon it a verdict was found for the defendants, the Co. On a motion for judgment it was *held*, that the facts pleaded were a good defence to the action on the pol.

1853.—The *English and Irish Church* So. announced:

> In this So. combination pol. of *Life* and *Fidelity* are granted on a principle combining the two risks, and rendering the required amount payable, *either at the death of the assu., or sooner, in the event of his committing a breach of fidelity*. . . . The ann. expense of such combination pol. is considerably less than the payments required for two pol. assuring the separate risks. . . . The fidelity portion of a combination pol. may at any time be discontinued when the necessity for its existence is removed; and the assu. will be entitled in respect of it to a proportionate bonus payable at death.

The *Anglo-Australian* Life, founded this year, had power to issue combined Fidelity and Life pol.; as also had the *Eclipse* Life, etc.

1854.—The *Diadem* Life Assu. Co. issued "Guar. pol. for sums payable in cases of defalcation, and breach of monetary trust, with life assu. Assurers maintaining an unimpaired guar. pol. for a term of years will be entitled to a proportionate reduction on the prem."

During this year the bus. of the *United Guarantee and Life* (1849) merged into the *People's Provident*, and that Co. commenced issuing Fidelity Ins. pol.

1856.—The *The Mercantile Guarantee and Assu.* Co. was founded [it had been projected in 1854], and undertook (*inter alia*) the bus. of Fidelity Ins.

1859.—The *European* [formerly *People's Provident*] obtained a Special Act of Parl., in which was included a series of clauses relating to Fidelity Ins.; and under which the Special Reserve Fund was created which subsequently became, and indeed still remains, a bone of contention in the winding-up of that Co. We have given the clauses of this Act in extenso in our hist. of that Co.

1861.—In *Towle* v. *National Guardian* Ins. So., before the Lords Justices this year, the facts were as follow: A. was a collector of taxes, and he effected a Fidelity pol. with the Co. In reply to the questions of the proposal form, he stated that he "was to collect and account for the sums collected by him; that the amount of money which he was to receive and retain in his hands was from £100 to £200, and not longer than a week; that his accounts would be checked weekly by the surveyor of taxes; that the balance of each account would on the occasion of such check be paid over; and that such balances would be occasionally tested by his employers." The whole amount of taxes receivable by him in a year was £9000, and it was by dividing that sum by 52 that he was enabled to answer as he had done as to the £100 and £200. He absconded in default to the amount of £654. On a bill filed by his sureties against the Co. for payment to them on the guar. pol. of £654, the Court *held* (reversing the decision of the Court below), that having regard to the rules appended to the pol., the answer of A. as to the sum to be received by him weekly was incorrect; and as such inaccuracy had not been waived by the Co., or communicated to them, the pol. was void. [30 L. J. Chanc. 900.]

1862.—The bus. of the *British Guar.* So. (1845) merged into the *European* So. No. 2, which thus acquired almost a monopoly of the bus. of the Gov. Departments. Previous to the union of these two Cos., their contentions for the Fidelity bus. of the Gov. Departments had on several occasions been noticed in Parliament.

1863.—*The Provident Clerks and General Guar.* Asso. Lim. was founded with a subs. cap. of £50,000. The Asso. is worked in connexion with the *Provident Clerks* Life. It has this special feature: the surplus profits after paying 6 p.c. div. are applied first towards paying up the shares of the Asso; and thereafter they are to be divided equally between pol.-holders and shareholders.

In the same year there was founded in Edin. the *National Guarantee and Suretiship* Asso. Lim.

1864.—The *Financial* Ins. Co. Lim., "for Fire, Life, and Guar.," was founded, as a proprietary Asso. Its Guar. department embraced various branches of bus. As to Fidelity Ins., it included "the counter-guaranteeing private sureties, and offering greater facilities to bankers, merchants, railway, and all public cos., for obtaining security for the honesty of their employés upon moderate terms, with the certainty that all claims will be fairly met and promptly paid. It continued:

> There has hitherto been a feeling of uncertainty upon these points, and in consequence, guarantee sos. have not altogether superseded private suretiship. In order to counteract this feeling, and give greater confidence to the public, this Co. proposes to refer all doubtful claims to the decision of competent mercantile men, who will, assisted by the directors, examine and settle the amount to be paid, thus avoiding all litigation; and it is believed that a Co. estab. upon this basis will meet with the support and confidence of the mercantile world. To employés requiring security, advantages will be offered for the assu. of their lives in connexion with the guarantee upon a reduced scale of prems., so that while securing their employers, they will at the same time be providing for their families in case of death on more favourable terms than it is possible to do in any other way.

The professions of this Co. in this matter of Fidelity turned out very shallow in practice.

1866.—The *Planet* Life [afterwards *Citizen*] undertook Fidelity Ins.

1867.—There was passed the 30 & 31 Vict. c. 108—*An Act to provide for the guar. of persons holding situations of trust under Gov. by Cos., Sos., or Asso.*—which provided that the heads of departments in the public service are authorized to accept as security the guarantee of any co. complying with the provisions of that Act, which were: 1. That the cap. actually subscribed shall not be less than £50,000. 2. The amount paid up not less than £20,000. 3. That a special fund be formed to guarantee securities given under the Act, not less at the commencement than £10,000, and to be increased by instalments of £1000 up to £20,000. This special fund is to be invested in the public funds, in the names of three or more directors, to be named by the Treasury, and to be exclusively liable after all other assets are exhausted to meet claims on guarantees under the Act.

The Act also provided that the amount for which the guarantee of any such So. was to be accepted in respect of any one person—that is, any one Government officer: for the limitation does not appear to apply to other persons—should vary with the amount of the special fund in the following measure:

Special Fund.	Limit of Guarantees.
Less than £20,000	£1,500
£20,000 and less than £30,000	£3,000
£30,000 and less than £50,000	£5,000
£50,000 and upwards	£10,000

and during the pendency of the security the special fund is not to be reduced. Every co.

was also required to furnish an ann. balance-sheet and statement to the Treasury, which was also empowered to inspect the books and to make regulations on the subject. (See 1875.)

1868.—There was founded the *General Accident and Guarantee* Co., from an early prosp. of which we take the following :

> In most bus. estab. of any note or magnitude, whether of a public or private character, the practice of requiring security from those who seek to fill positions which involve money responsibilities is very general; and the guar. of a public co. is now usually sought, in preference to the bond of individuals, both by employers and those employed, for the following reasons. I. *As regards the employer*:—(A.) A public co., having a corporate existence, and known cap. and assets readily available, the extent of the security it affords is placed beyond doubt; while a private surety, at the time of executing the bond, may have been in a state of concealed insolvency, or may become unable to pay a demand under it, should a claim arise. (B.) The contract with a co. being one renewable every year, evidence of the existence and solvency of the co. is always kept fresh. It sometimes happens, in cases of private suretiship, that the surety is not heard of for a long series of years. (C.) Trouble is avoided in instituting inquiries as to the solvency of the sureties. (D.) The amount claimed is more speedily recovered in case of default. II. *As regards the employed*:—(A.) The disagreeable necessity of applying to friends or relatives to become sureties, and all unnecessary personal obligations, are avoided. (B.) The pol. of the co., being only granted after due inquiry into the character of the employed, forms in itself a kind of certificate to his past good conduct.
>
> Other benefits are provided by the *combined* plan of this Co., and the *mutual* system adopted in respect to the *quinquennial division of profits*, whereby a return in the prems. is made to those whose fidelity continues unimpeached.
>
> The constant expansion which British commercial enterprise is experiencing daily increases the necessity for reposing confidence in clerks, agents, and other persons, and consequently the demand for guarantees of their fidelity. For this demand the resources of the sos. at present transacting guar. bus. in the U.K. are inadequate, and ample support may therefore be anticipated for a new undertaking of the kind, commenced upon sound and liberal principles, and under the guidance of men of influence and experience. Perhaps there are few kinds of bus., when carried out with judgment and caution, which afford a more certain and profitable return than that of Fidelity Guar.
>
> The rates of this Co., both for guar. and accident, have been constructed on the most recent data by Arthur Scratchley, Esq., M.A., the Co.'s Consulting Act., and owing to the experience which has now been gained with regard to the relative incidence of the risks undergone, the rates will be found to be more equitably adjusted than those hitherto charged.

In 1870 the bus. of the Co., which was small, merged into the *Gen. Guarantee* Co. Lim.

Mr. Bunyon, in the second ed. of *The Law of Life Assu.* etc. 1868, says under "Guarantee Cos." :

> The onerous nature of the office of surety, the severe effect of the obligation when enforced, and yet the comparative rarity of cases in which the necessity to enforce it arises when fidelity is alone guaranteed, naturally suggest it as one which might be conveniently sustained by a public co. for profit. Yet the bus. of such cos. is at present in its infancy, and apparently beset with difficulty: for however simple the mere guarantee of honesty may appear, by the necessity of the case it is continually resolving itself into the far more difficult question of the guarantee of commercial credit, or at least of solvency. This is obviously the case when the relation between the employer and the employed is such that the account between them assumes the form of a debtor and creditor account, and a deficiency ceases to be felonious.

He then enters into some of the practical and legal considerations involved in the conduct of the bus. We do not follow him, as we have ourselves to deal with these points under FIDELITY INS., PRACTICE OF.

1869.—The *London Guar. and Accident* Co. was founded. Its prosp. said : "The working of a *selected* guar. bus. shows that from 50 to 55 p.c. of the prems. will more than meet the claims, while the expenses are small, and decrease in proportion to the increase of income. There are at present but two cos. in Eng. doing guar. bus. of any considerable amount. One, although only in a few hands, and confining its operations chiefly to Lond., has proved highly profitable; the other, more recently estab., and with a comparatively small income, has paid in the last year in div. and bonus over 15 p.c. on the cap. employed. These two practically represent the only supply for a want more or less present to every employer. It is believed that these cos. have not extended their operations abroad—not even to India or the Colonies." (See 1871.)

The *British Guardian* Life was founded this year, and took powers to issue Fidelity pol.

1870.—The officials of the Lond. and North-Western Railway formed a Mutual Fidelity Guarantee Asso., to be confined entirely to the employés of that Co. They were understood to have been previously insured in the *European*.

The *General Guarantee* Co., founded upon the bus. of the Gen. Guarantee and Accident Co. (1868), was estab. this year ; but it shortly afterwards trans. its risks to the *Lond. Guar. and Accident* Co.

The *Government Employés Mut. Guar.* Asso. was projected during the same year, but did not mature.

1871.—The *British National* Ins. Corp. was founded. We have already in our hist. of the Co. stated its features in regard to Fidelity Ins.

At the close of this year the Fidelity branch of the *European* was trans. to the *Lond. Guarantee and Accident* Co.

1872.—The *British Prov. Life and Guar.* Asso was founded, and made a special feature of issuing combined Fidelity and Life pol.

In Jan. of this year an order was made to wind up the European So. The Fidelity branch of the Co.'s bus. had in the previous year been trans. to the *London Guarantee and Accident* Co. There were however undisputed claims under Fidelity pol. remaining unpaid. The parties now claimed to be paid in full out of the "Gov. Guarantee Fund" which had been created under the Co.'s Special Act in 1859. In our hist. of the winding-up we have stated the decision of Lord Westbury in the *Ruthin Guardians of the Poor case.* The *Oporto Mining Co.'s case* was governed by the decision in the last-named case. The *Bank of Ontario's case* has more recently been argued before the Privy Council, and is now waiting judgment. The Guarantee Fund in June, 1873, stood at £34,333.

It was understood that the profits of the Fidelity branch of the *European*, under which a very large bus. was for some years transacted, were very considerable. Mr. A. G. Finlaison, in his Rep. to the Co. May, 1871, said, "I have been supplied with a statement showing that the ann. average profits of the Guar. bus. for the last 5 years exceed £19,000 p.a."

1873.—There was founded in Edin. the *Guarantee Asso. of Scotland.*

1874.—There was founded the *Commercial Guarantee* So., Lim.; which announced that its bonds, *i.e.* pol., "will be free from any vexatious clauses, and so framed as to find favour with the Gov., public cos., and large mercantile houses of the U.K."

1875.—Mr. W. H. Smith, on behalf of the Gov., introduced a Bill to repeal the 30 & 31 Vict. c. 108 (1867), and make other provisions in lieu thereof.

Fidelity Ins. has now become a recognized branch of bus. in the U.K.; and private suretiship is a thing of the past. In the progress of the bus. the cos. have much to learn, and their conditions have from time to time become increasingly stringent. On the other hand, the competition of the various asso. has had a tendency to relax that stringency—not always with wisdom. The cos. are liable to be made the victims of collusive fraud: hence they have had to make the criminal prosecution of all delinquents a *sine qua non.* The bus. is distinct from all other branches of Ins. While these have the element of *moral hazard* in a partial degree: Fidelity Ins. *is all moral hazard.* But experience has determined in prudently managed offices the exclusion of large classes of risks attended with undue danger. While by the institution of efficient regulations classes of persons formerly excluded may be re-admitted. The aggregate prem. income from the bus. prob. now exceeds £100,000 p.a.; and a reasonable profit is secured where care in the selection of risks is exercised.

In the *U. S.* Fidelity Ins. cannot be said to have become a recognized branch of bus. Several asso. have been projected; but none of them have taken practical shape. An art. in the *Ins. Times* of N.Y. Dec. 1873, appears to regard Fidelity Ins. as unsuited to the circumstances of the country. We observe, however, that an application for the incorp. of a Fidelity Ins. Co. was before the Massachusetts Legislature in the early part of the present year (1875); proposed cap. 300,000 dols. One-half to be paid up. There can be no doubt that a thorough comprehension of the nature of the risks incurred will be essential to success.

In *Canada* there exists a Fidelity Ins. Co.

In *Russia* there exists an inst.—a sort of combination of gild and and friendly So., but in some respects differing from each—known as an *Artel;* and one of its purposes renders it analogous to our Fidelity Guarantee Asso. Mr. Hepworth Dixon, in his *Free Russia*, thus describes its working:

> If a Russian banker wants a clerk, he sends for the Elder of an Artel, looks at his list, and hires his servant from the So. in that So.'s name. He seeks no character, takes no guarantee. The Artel is responsible for the clerk, and the banker trusts him in perfect confidence to the full extent of the Artel fund. If the clerk should proved to be a rogue—a thing which sometimes happens—the banker calls in the Elder, certifies the fact, and gets his money paid back at once.

We shall give some further account of these Artels under GILDS.

FIDELITY INS., PRACTICE OF.—There are few branches of Ins. bus. more dependent for success upon accuracy of practice than that of Fidelity Ins. Its contracts become the subject of discussion after events have drifted into unpleasant phases. The losses the asso. are called upon to replace are not unfrequently surrounded with circumstances of concealment and betrayal of trust, involving more than a simple pecuniary consideration. The real nature of the risk upon which the co. has been placed is often only revealed on investigation of the loss incurred; and then become disclosed facts which ought to have been known to both sides from the beginning. We propose here to make the nature of the contract clear.

It may be well to state now that while the bus. was in the first instance confined very much to the clerks, cashiers, collectors, and travellers of commercial firms, and to the officials of public cos., it has in its later growth been extended into the following Gov. and other public departments, at rates of which the following are approximations:

Admiralty—for paymasters and assistant-paymasters while on full-pay only; from 20*s.* p.c.

War Office—for accountants and paymasters; at home 20*s.* p.c.; abroad 25*s.* p.c.

Board of Trade—for superintendents and clerks in mercantile marine offices; rate 20*s.* p.c.

Court of Chancery—for official liquidators, rate 10*s.* p.c.; receivers, rate from 10*s.* to 20*s.* p.c.; and auctioneers, 10*s.* p.c.

Court of Bankruptcy—for trustees; bonds under £500, 15*s.* p.c.; £500 and over, 10*s.* p.c.

County Courts—for registrars and high-bailiffs, rate 10*s.* p.c.; under-bailiffs and other officers, rate 20*s.* p.c.

Inland Revenue—for distributors and sub-distributors of stamps, from 15*s*. to 20*s*. p.c.; collectors of income and assessed taxes, from 30*s*. to 40*s*. p.c.; maltsters, for malt duty, 20*s*. p.c.; varnish makers, spirit licence, 10*s*. p.c.

Local Gov. Board—for clerks to guardians and vestries, 15*s*. to 20*s*. p.c.; masters and matrons of workhouses, 20*s*. p.c.; surveyors, 20*s*. to 30*s*. p.c.; assistant-overseers and collectors, 40*s*. p.c.; relieving officers, 30*s*. to 40*s*. p.c.; other parish officers at rates varying with their duties.

Post Office—for postmasters, sub-postmasters, letter-receivers, 10*s*. to 15*s*. p.c.; postmasters' clerks, 5*s*. p.c.; letter receivers' clerks, 15*s*. p.c.

Savings Banks—for actuaries and clerks; rates, 12*s*. 6*d*. N.B.—The Savings Banks Acts require two sureties, who are to give their bond without fee or reward. The Fidelity Cos. re-insure these.

Corporations and Public Cos.—(*a*) for man., sec., and clerks of all public cos.; (*b*) for clerks, collectors, and other officials of corp.; (*c*) for agents of shipping and telegraph cos.; (*d*) for secs. of building sos.; (*e*) for collectors of water, gas, and dock cos. The rates here vary from 10*s*. to 80*s*. p.c., according to the circumstances of the case.

It has been found desirable to have forms of pol. specially adapted to many of these classes, and not unfrequently special forms of proposal; so that the stationery department of a Fidelity Ins. office has become a matter of some cost.

But the bus. has extended, so as to cover bonds given for malt tax; to the guarantee of contractors for public works; and to the securing of judgment debts. These several last-named divisions will be spoken of in more detail under GUARANTEE INS.

When application is made for a pol., a proposal form or application is required to be filled up by the applicant, *i.e.* the employed, and a statement of the duties and responsibilities of the position is also required from the employer. The questions to be answered by the person whose fidelity is proposed to be guaranteed vary slightly in different offices. At a preliminary step, some of the cos. now require a form to be filled up, stating:

1. Full name, address, and age of proposer — 2. Amount of security required — 3. Nature of employment — 4. Salary or other remuneration and deductions (if any) — 5. How have you been engaged for the last five years—From 18- to 18- as —— with ——; From 18- to 18- as —— with ——; From 18- to 18- as —— with —— 6. Full name, address, and business of employer — 7. Give the names and addresses of two persons who are householders to whom the co. may refer if necessary —.

The directors having decided that the proposal may go forward, another form is sent out embodying the following add. questions:

1. Are you single or married? How many children have you, and are they all wholly dependent upon you? 2. State name and address of your parents, or other nearest relatives. 3. Are you security for any person? If so, state particulars. 4. What is the total amount of your debts or liabilities? 5. Were you ever bankrupt or insolvent, or did you ever compound with your creditors? If so, state in what year and what arrangement was made? 6. Are you possessed of any independent means or private property? If so, state particulars, and whether there are any incumbrances thereon. 7. Have you ever been discharged from any situation, or been deprived of a commission or any other engagement? If so, state particulars. 8. Are you engaged in any other business or calling, or do you travel, or hold commissions for any other houses? If so, state your net income from each. 9. Have you ever been accepted or declined by this or any other Guarantee Company? If accepted, at what rate of premium? 10. Are you a householder or lodger, and how long have you lived at your present residence? Does the furniture belong to you? Is it incumbered, and what do you estimate its value?

The applicant has to declare that in his replies to the foregoing he has "stated the truth without any reservation whatsoever."

The form to be filled up by the private referees of the applicant embraces the following questions:

1. Is the proposer well known to you? And how long have you known him? 2. Is he connected with you by relationship, or otherwise? 3. State the name and address of the proposer's father, or other near relative. 4. Do you consider the proposer a sober, steady, and reliable person, living within his means? 5. What opportunities have you had of forming a judgment of his integrity and general character? 6. Do you think him thoroughly careful and qualified for a position of trust and responsibility of the receipt and custody of money? 7. Has he ever been suspected of fraud or dishonesty, or of dishonourable or improper conduct, or of being addicted to gambling or drinking? 8. Has he any debts or liabilities? Or is he security for any person? 9. Has he ever been in pecuniary difficulties, bankrupt, insolvent, etc.? If so, when and how caused? 10. Is he, in your opinion, a safe and proper person for the company to guarantee to the amount stated above against dishonesty, having regard to the position he is to fill? 11. What has been his business or employment during the time you have known him? Has he ever, to your knowledge, been dismissed from any situation, and under what circumstances?

The form to be filled up by the employer contains the following questions:

1. What is your name, style, or firm, your business and address? 2. If the applicant has been at any time in your employment, have you always been satisfied with his honesty and general conduct? 3. What is to be the amount of the guarantee, and is it the only security required or held, or to be held by you? 4. If any person holding a similar situation in your employ has been detected in any defalcation, state how it was committed and discovered. 5. Describe, as fully as possible, the duties of the applicant, and state the largest sum with which he is likely to be entrusted at one time. 6. Is any stock-in-trade or goods to be entrusted to his custody for sale. If so, state its extreme value, and how often stock thereof is to be taken. 7. How often will you furnish statements of accounts direct to customers and not through the applicant? 8. What is the usual credit given by your house? 9. How often is he to be required to send a statement of cash received, and what are your regulations as to remittances by him? 10. Is he to be allowed to retain a balance in hand, if so, to what limit, and when and how often is the balance to be paid over? 11. Do you write to those persons who the applicant reports have not paid their accounts, or have paid only part of the amount due, or how otherwise will you check any irregularity? 12. What is to be the remuneration of the applicant and allowance for expenses, and how are they to be paid? 13. Is the applicant to be responsible for bad debts, or are his allowances subject to any deductions?

The employer is required to sign an assent that the above replies "shall be taken as the basis of the contract between me and the Co." In the case of cashiers, travellers, etc., a much more stringent form is frequently employed.

Sometimes there is more than one employer, in which case the "other employers" receive some such form as the following:

1. How long has the proposer been in your employ? 2. Is he of sober and correct habits? 3. Has he ever been suspected of fraud or dishonesty, or of dishonourable or improper conduct? 4. Have his accounts always been, whilst with you, all in good order, his settlements regularly made, and remittances according to your regulations? 5. What is about the net amount of his income from his engagement with you? 6. Have you ever heard of his being addicted to betting, horse-racing, or any other sort of gambling? 7. Do you think he is a safe and proper person for the Company to become guarantee, to the amount stated above, against dishonesty, having regard to the position he is to fill? 8. Does he owe you any balance? If so, roughly, how much? 9. Do you know of any circumstances affecting the applicant with which this Co. should be made acquainted, or which would render the risk of guaranteeing him more than usually hazardous?

The other "employer" is reminded that his answers "will be the principal means of enabling the Board to decide upon the proposal; and as the advantages contemplated by the system of associated guarantees can only be realized by all parties communicating freely with the Co.," he is solicited to make full and candid replies, which will be treated as strictly private and confidential.

Where there has been a "previous employer," his testimony is regarded as of great value: and accordingly the following series of questions are addressed him:

1. When did the proposer leave your service? And how long had he been with you? 2. Was he, while with you, of sober and correct habits? 3. Was he ever suspected of fraud or dishonesty, or of dishonourable or improper conduct? 4. Were his accounts, whilst with you, all in good order, his settlements regularly made, and remittances according to your regulations? 5. Why did he leave you? 6. Have you ever heard of his being addicted to betting, horse-racing, or any other sort of gambling? 7. From his conduct while with you do you think he is a safe and proper person for the Co. to become guarantee to the amount stated above, against DISHONESTY, having regard to the position he is to fill? 8. Have you since he left you heard anything of his career or proceedings unfavourable to his character? 9. Do you know of any circumstances affecting the applicant with which this Co. should be made acquainted, or which would render the risk of guaranteeing him more than usually hazardous?

The amount proposed to be insured is stated, and a similar reminder of the importance of full information as that sent to the "other employer," accompanies it.

It is manifest that the object is to ascertain (1) the exact position of the applicant, and how far his circumstances, whether arising from past transactions, or from the benefits derived from his present employment, are such as to prevent his being subjected to any special temptations to dishonesty; (2) that sufficient checks are employed to secure his exactness, and that the negligence of the employer shall not conduce to temptation or improper conduct; (3) that the requirement of security does not arise from any want of confidence on the part of the employer, and that there have been no circumstances of such a nature as to elicit it; and particularly that all accounts are then correct, so that by the process of carrying on a balance, the Co. may not be made ultimately liable for past deficiencies.

Upon the statements in the several forms here given being considered by the board, and deemed satisfactory, a pol., usually called an "agreement" or "contract," is issued by the Co. in the following form, or in some form approximating thereto:

Agreement to Guarantee. No. — Amount Guaranteed £ — Premium £ — Whereas —— hereinafter called the "Employer," intends to employ as —— hereinafter called the "Employed," and hath applied to the —— Co., hereinafter called the "Company," for the grant by them of this pol.

And whereas the said employer has delivered to the Co. certain statements and a declaration, setting forth, among other things, the duties and remuneration of the said employed, the moneys to be entrusted to him, and the checks to be kept upon his accounts, and hath consented that such declaration, and each and every the statements therein referred to or contained, shall form the basis of the contract hereinafter expressed to be made.

And whereas there has been paid to the Co. the sum mentioned in the margin hereof, and designated *prem.*, as a prem. for one year from the date hereof.

Now it is hereby agreed and declared that, subject to the provisions of the memorandum and art. of asso. of the said co., and subject to the conditions herein contained which shall be conditions precedent to the right on the part of the said employer to recover under this pol. during one year from the date hereof, and during any year thereafter in respect of which the co. shall consent to accept, and the employer shall pay on the day of the date hereof, the aforesaid prem., the co. shall, at the expiration of three months next after proof satisfactory to the directors of the loss hereinafter mentioned has been given to the co., make good and reimburse to the employer to the extent of the sum designated in the margin hereof as the *amount guaranteed* and no further, such pecuniary loss sustained by the employer by reason of any fraud or dishonesty of the employed in connexion with the duties hereinbefore referred to as shall amount to embezzlement of money, and be committed and discovered during the continuance of this pol., and within three months from the death, dismissal or retirement of the employed.

Provided, that on the discovery of any fraud or defalcation, the employer shall immediately give notice thereof to the co., and any claim made in respect of this pol. shall be in writing, addressed to the co.'s chief offices in Lond., within three months after such discovery; and the co. shall be entitled to call for, at the employer's expense, such reasonable particulars and proofs of the correctness of such claim and of the correctness of the statements made at the time of effecting or deemed to be made at any renewal of this pol., as the directors for the time being may require, and to have the same, or any of them, verified by statutory declaration. And no more than one claim, and that only in respect of acts or defaults committed within twelve months from the date of the receipt by the co. of such notice as aforesaid, shall be made under this pol., which, upon the making of such claim, shall wholly cease and determine, and shall be given up discharged on the payment of such claim. And this pol. is granted on the condition that the bus. of the employer shall continue to be conducted and the duties and remuneration of the employed shall remain in every particular in accordance with the statements, and each of them, and declaration hereinbefore referred to, and if during the continuance of this pol. any circumstance shall occur or change be made, which shall have the effect of making the actual facts differ from such statements or any of them, without notice thereof being given to the co. at its chief office, and the consent or approval in writing of the co. being obtained, or if any suppression or mis-statement be made at the time of payment of the first or any subsequent prem., this pol. shall be void, and all prems. paid thereon forfeited to the co.

Provided, that the employer shall, if and when required by the co., but at the expense of the co., if a conviction be obtained, use all diligence in prosecuting the employed to conviction for any fraud or dishonesty, as aforesaid, which he shall have committed, and in consequence of which a claim shall have been made under this pol., and shall, at the co.'s expense, give all information and assistance to enable the co. to sue for and obtain reimbursement by the employed or by his estate, of any moneys which the co. shall have become liable to pay.

Provided lastly, that if the employer shall at the time of the granting this pol., or any time thereafter, be guaranteed or hold any securities against loss covered by this pol., the co. shall only be liable to make good any loss covered by this pol. rateably and with just proportion, taking into account the value of such security, and if any difference shall arise as to the amount payable under this pol., the same shall be submitted to arbitration, and in any such arbitration full effect shall be given to the "Common Law Procedure Act, 1854," relating to arbitration. In witness, etc.

It will be observed that this form of pol. has no conditions indorsed upon it. When special circumstances call for conditions, they have to be framed in regard to those circumstances.

The forms are not yet complete. We have still the usual "Agreement for Indemnity" given by the "Employed" to the Co.; and which is generally in some such form as the following:

Agreement between the undersigned (hereinafter called the "Employed") of the one part, and the —— co. (hereinafter called the "Company"), of the other part.

1. The co. having issued a pol. or agreement guaranteeing certain persons therein named against loss from certain acts or defaults by the said employed as therein specified, the employed hereby agrees to repay to the co. all moneys paid under the said pol. or agreement, or any other pol. or agreement hereafter to be given by the co. to guarantee the fidelity of the said employed, together with all losses, damages, costs, charges, and expenses (if any) which the co. shall in any way incur, be put to, or pay in consequence of such pol. or policies, and to indemnify the co. against all loss, damage, and expense whatever, caused, sustained, or incurred in consequence of any such guarantee now or hereafter to be given.

2. In case the co. shall receive notice of any claim intended to be made under any such pol. of agreement, the co. may at any time thereafter, and without notice, take possession of any money, property, or effects which the co. may find belonging to the employed, and enter into any house, apartment, rooms, or other premises, wherein or upon which any money or property belonging to him may then happen, or may be supposed to be; and if necessary to break into any such house, apartment, or other premises, and either to remain therein, or to remove such money or property, and to hold the same as security against such claim. And in case the co. shall make any payment under any such pol. or agreement, the co. may apply any such money, and sell or otherwise dispose of such property as it shall deem best for its own reimbursement of the amount of the payment, and of all costs, charges, and expenses paid or incurred in investigating or resisting the claim, and of seizing, keeping, and selling the said goods, chattels, property, and effects, or incident thereto, or otherwise.

3. An indorsement on any pol. or agreement so given, stating the amount paid by the co. thereunder, shall be conclusive evidence as to the amount of the payment, and that the co. was liable thereto and has duly paid the same; and in all cases wherein it may be necessary to give any notice to the employed, such notice shall be deemed to be properly given if sent by post, addressed to him at his place of abode mentioned below, or in case he shall have notified to the co. a change of his place of abode, at the place of abode so notified.

4. The employed hereby indemnifies the co. against all consequences of acting under this agreement, and agrees to do and excute any deed or thing as may be necessary, in order more effectually to give to the co. such rights and powers, or any of them, as are herein expressed to be given.

It is clear from the foregoing—which, as we have said, relate only to the ordinary form of fidelity guarantee—that the Co. relies upon the representations of the parties; and the observance of perfect good faith on their part is a condition precedent to the enforcement of the contract. A misrepresentation of any material fact, which if known to the Co. might have prevented it from undertaking the risk, will render the suretiship contract invalid. But the non-communication of material facts (where not falling within the scope of the questions of the proposal) does not render the pol. void, as in the contract of Life Ins. This has been the ruling in regard to suretiship contracts under the general law.

But the principle of good faith not only applies to the inception of the contract, but to its continuance—that is, to all the subsequent transactions contemplated by the contract. The relative positions of the parties must be preserved. Any act on the part of the employer which has the effect of altering the position of the surety will discharge the latter. For instance, the concealment by the employer of an embezzlement would discharge the Co. The employer too, in order to be entitled to recover, must have performed his own part of the contract. Thus in a case where a man put his son apprentice, and gave a bond for his fidelity, and his employer covenanted that he would settle the cash-book every month: on an embezzlement occurring, and it appearing that the employer had neglected to settle the cash, it was *held*, that the father should be relieved from so much as was embezzled after the first month. [*Montague* v. *Tidcombe*, 2 Vern.] In this case a separate covenant was entered into; but the effect would be the same if there was a distinct contract or warranty that a particular course should be pursued; although it would be otherwise where there was no warranty or agreement, but a mere representation of the usual practice or intention of the employer; as we have seen in the case of *Benham* v. *United Guarantee and Life*, in the preceding art. under date 1852.

Upon a bond conditioned for the faithful service of a person as clerk, the surety may be liable for complicity by a clerk in the default of another, notwithstanding there may have been no misapplication of moneys by him in his own favour. Thus where the cashier of a railway suffered moneys to remain in the hands of the booking clerks, making up moneys on one day by appropriating to it moneys received on the following day, the sureties were held liable. [*London and Brighton South-Coast Railway* v. *Goodwin*, 3 Exch. 736.] Gross negligence on the part of a clerk will occasion a similar liability. Where the contract is in the nature of a guarantee for money actually becoming due from the employed, the case is different; this we have seen in the case of *Walker* v. *Brit. Guar.* Asso. in the preceding art. under date 1852.

The sureties will only be liable for the default of the employed in the due performance of the bus. to which their guarantee contract relates. Should there be any ambiguity in the words of the guarantee, they will, as in the case of other written instruments, be construed more strictly against the guarantor; but the obligation itself is to be construed strictly, and not extended to any other subject, to any other person, nor to any other period of time than is expressed or necessarily included in it.

The preceding, which is a brief outline of the law of suretiship, is always subject to the particular conditions of the pol. issued; and as these conditions differ in the different cos., it will be seen that correct conclusions regarding any given contract can only be formed upon a careful perusal of the contract itself.

The premiums already quoted in connexion with the classes of bus. undertaken must be regarded as approximate only. The experience of the manager and of the directors in course of time furnishes means for more minute adjustment of the prems., as also for the total exclusion of risks offered. When security of any tangible kind is offered to the Co., considerable reductions may be made. "Length of service, position, and means," are all circumstances of importance to be taken into account in fixing the rates.

Various improvements and expansions have been introduced into the bus. Thus where it is still the rule to require private sureties, the fidelity cos. will issue bonds indemnifying the sureties, so as to relieve them from all liability whatever.

Then the *Lond. Guar. and Accident* Co. grant "floating pol." covering a staff of clerks of any number over 5, to the amount agreed on, say £500, £1000, or £2000. The prospectus says:

> The experience of the *Lond. Guarantee and Accident Co.* with large staffs, such as the Post Office and other Gov. Departments, railways, and large commercial firms, confirmed by that of the several mutual funds now in existence, has induced the directors to modify the old practice hitherto followed. The troublesome system of individual contracts, long lists of questions, and personal inquiries will be abandoned in such cases, and a new form of contract adopted under the title of a "floating pol." . .
>
> This pol. will cover any number of defaults that may arise during any year of its currency up to the full amount insured, or, if it be preferred, the pol. will be indorsed, assigning the limit of loss to each particular clerk at say £100 or £200, or more, according to his position and responsibilities.
>
> To effect a floating pol. all that is necessary is for the employer (in the case of a public co., the manager or other appointed officer) to state the names and addresses of the clerks, their duties, and the general system of the office, in reference to money, receipts, and payments. In the event of changes in a

Staff not exceeding in number.	Ann. Prem. for a Floating Pol. of—								
	£500.			£1000.			£2000.		
	£	s.	d.	£	s.	d.	£	s.	d.
5	12	10	0	20	0	0	37	10	0
10	17	10	0	30	0	0	56	5	0
15	22	10	0	40	0	0	75	0	0
20	27	10	0	50	0	0	95	0	0

staff, the name of the new member may be added, and the total number covered by the pol. may be increased on payment of the proportionate prem. The prems. for floating pol. are as above.

These pol. apply only to staffs of clerks or others engaged in an office under the control of a principal or a superior. Application should be made to the head office of the Co.

We observe that Mr. Bunyon, in his *Law of Life Assu.* 1868, is under the impression, from the stringent nature of "securities to the Crown," that the real estate of shareholders in fidelity ins. cos. not incorporated is affected with liability beyond that arising in their simple character of shareholders in any such co. We venture to think this can hardly be so in the case of cos. regis. with "limited liability" under the Cos. Acts of 1862 and 1867. Nor can it be so in regard to cos. complying with the conditions of the Act of 1867—the 30 & 31 Vict. c. 108, already recited in the preceding art. Notice of a bill which will repeal this Act is now before Parl., and attention should be given to this point in framing the new measure.

FIDELITY AND LIFE INS. COMBINED.—In our history of Fidelity Ins. we have shown that the idea of combining these two classes of bus. occurred at a very early period after the practice of Fidelity Ins. had become estab. The scheme took this form: In the prems. charged for life ins. there is a margin for expenses and contingencies: let a portion of this margin be applied towards covering the risk of fidelity ins. so that a life pol. for £500 payable at death shall during life form also a fidelity contract for a like amount, or for a lesser or greater sum. The prem. to be charged will be something greater than the ordinary life prem.; but less than the life prem. and fidelity prem. separately paid. At each division of surplus, the future joint prem. to be reduced by the measure of profit resulting from the two branches of the bus. In the event of claim for breach of fidelity, the interest in the life pol. to lapse.

Separate proposal and reference forms were to be filled up, and separate pol. issued.

The objections to or difficulties in the way of the bus. were several: 1. The fidelity references may be good; but the life uninsurable; or *vice versa*. 2. Inefficient selection in either branch will damage the finances, and therefore weaken the security of the asso. 3. A portion of the expected surplus is appropriated by anticipation to one class of pol.-holders, before even the existence of any profits can be known. This would be less objectionable if all the pol.-holders were precisely on the same footing.

On the other hand, it has been contended that a man who goes on paying a fidelity ins. prem. for a series of years, with a conscientious knowledge that in his case the ins. was never necessary, feels that he has paid, and is paying away a considerable sum of money without receiving any personal advantage for it; but when it is made a means of sustaining a life pol., and therefore of providing for those dependent on him in the future, all such feeling is removed: and he cheerfully continues a contract *which must be of value some day.*

The first Co. which undertook to issue these *combined* insurances was the *United Guarantee and Life*, founded 1849. The principle of combining these risks was said to have had the approval of Prof. De Morgan. Mr. Edward Ryley constructed the T. for the Co. No uniform rate p.c. for the combined risk was pub. The scales of prem. put forward in the prosp. were in nature of examples; and by their obscurity appeared to betray a want of confidence on the part of the promoters. Here is an example:

A pol. of guar. of £1000 for which the prem. required by a guar. so. would be 20*s.* p.c. may be obtained from this Co. in combination with a life pol. for £500 upon payment of the following ann. prem.:

Age.	Amount of pol.	Description of risk.	Prems. for both.			Ann. saving over that charged by separate Cos.		
			£	*s.*	*d.*	£	*s.*	*d.*
20	£1000	Guarantee	15	10	4	4	6	9
	500	Life						
30	£1000	Guarantee	18	8	4	4	9	2
	500	Life						
40	£1000	Guarantee	22	9	1	4	0	6
	500	Life						

For a person aged 35 a life pol. for £1000 and a fidelity pol. for £1000 (rate 20*s.* p.c.) on combined plan was granted for an ann. prem. of £32 15*s.* 11*d.*; while the charges for like pol. uncombined would have been: life pol. £28 17*s.* 6*d.*; fid. pol. £10; total, £38 17*s.* 6*d.*—showing a saving of £6 1*s.* 7*d.* p. ann., with parti. in three-fifths of the profits quinquennially. Endowment life pol., and deferred annu. might be combined with fidelity ins. The Co. transacted but a small bus., and in 1854 was united with the *People's Provident*, which we believe did not continue to issue combined pol.

Mr. Arthur Scratchley, M.A., in his *Principles and Practice of Life Assu.*, etc., preface dated August, 1866, says:

> A pure guar. so. is argued to be defective in one respect: that it does not tend, as is the case with private suretiship, to discourage dishonesty in the employed. Persons, it is said, who would shrink from the commission of a dishonest act when their misconduct would bring disgrace upon friends and

relations, would care but little as to the pecuniary loss inflicted on a so. *The union of L. with Fid. Assu., if it does not furnish a perfect remedy to this defect, is considered to diminish it.* The pol. of assu., when conjoined with that of guar., is made payable on the death of the assu., *but on the condition that he remain honest during life.* The add. expense of the L. pol. is comparatively trifling, as two risks dependent on each other can always be assu. at a cheaper rate than when taken separately. When a man takes out a L. pol., he is usually anxious to keep it on foot for the sake of his family, or for other purposes, and will not readily do that which jeopardizes its forfeiture. The union of L. with Guar. Assu. therefore operates as a check to dishonesty, and gives add. security to employers by the contingent self-interest involved in the pol. of L. assu. on the part of the employed.

The later Cos. which have issued combined Life and Fidelity pol. we believe are all distinguished in our hist. of FIDELITY INS. They present no new features.

In the case where it is a condition of the pol. that the life portion of the risk shall absolutely cease on any claim arising under the fidelity portion of the risk (as Mr. Scratchley has assumed), no great difficulties are likely to arise: for if the life pol. be deposited as distinct from the fidelity pol., it carries notice of its possible forfeiture as part and parcel of itself. But where the pol. is so framed as to create but a lien on the sum insured at death as against any sum paid under the fidelity branch, the case becomes far more complicated. The office must not be called upon to pay more than the gross sum insured. It might otherwise happen, in the event of the insured dying a defaulter in a fiduciary respect, that the Co. would be called upon to pay under both branches of the ins. simultaneously. The contract must explicitly provide against such casualties.

In regard to surrender values too, care must be taken. The life portion of a combined pol. must not be liable to surrender while the fidelity portion of the risk is still running. And whenever a surrender value is given, regard must be had to the original reduction in the rate: unless indeed the surplus shall have been found fully to justify the original reduction.

It will be seen then that the contract of fidelity and life ins. combined is one requiring the most grave care and consideration, from many points of view; and it may be that these difficulties (which the original proposer of the scheme appears to have had no conception of) have prevented the combination from becoming at all general in practice.

FIDUCIARY.—One who holds anything in trust.

FIEF (from the Latin *feodum*).—The French designation for an estate in lands held of a feudal superior. In English law language, a *fee;* also termed a *feud* by writers on feudal jurisprudence.

FIELD, JOHN, JUN., was Sec. of *Lond. Annu. So. for the Benefit of Widows* in 1820.

FIERY SPOTS.—The popular name for *erythema chronicum*, characterized by the appearance of red patches on the face.

FIGURATE NUMBERS.—In Arithmetic, a series of numbers derived from an ordinary arithmetical progression, by a certain uniform law.

FIGURE-HEAD.—The figure, statue, or bust representing the subject of a ship's name, or the projecting part of the prow, above the cut-water. Now very usually dispensed with.

FIJI.—As British ins. offices will prob. soon be estab. agencies, or granting permits for residence, in our newest acquired possession [annexed 1874], the following details regarding her V. statistics may be interesting. They are drawn from a Rep. compiled by Staff-Surgeon Messer, from information collected in 1873 and 1874, and forwarded to the Colonial Office.

He estimates the white pop. of the islands at 2000, about 1700 of them being British subjects, mostly either of Australian birth or long resident there, and who have been subjected to the influence of different climates and have undergone hardships. Not a few have led wild and reckless lives, bringing to Fiji but the wreck of their original selves. But there are, he says, numbers of fine, strong, well-grown men. The climate of the Fiji Islands is strictly tropical, the hot moist season extending from November to April, and the cool dry season from May to October; but strong trade winds and the insular arrangement of the land have a powerful influence in moderating the temperature, and materially check the spread of disease and prevent the accumulation of poisonous miasmata arising from the enormous quantity of decaying vegetable matter. Zymotic diseases, such as smallpox and fever, are as yet nearly unknown in Fiji; and periodic diseases, such as ague and remittent fever, which owe their origin to malaria, are, strange to say, vary rare, if not altogether wanting. The native race is chaste, and venereal disease is at present almost unknown. In no part of the group did Dr. Messer hear of any death from sunstroke, although most of the Europeans work the whole day in the open air exposed to a tropical sun, wearing only an ordinary straw hat and puggery, or occasionally a pith helmet. Throughout most of the year the breeze keeps the air in motion, and produces evaporation from the surface of the body, decreasing its temperature. Asthma and bronchitis, however, are very common among the natives, and at certain seasons very fatal to the old and the very young. Of the prevalence of delirium tremens there is no lack of evidence. The natives maintain that "kava drinking" is useful and healthy. It soothes somewhat like opium, and is a warm aromatic stomachic drink; but it is evidently hurtful when taken to the extent to which many white people indulge in it. Dr. Messer says: "Dysentery is the only disease which Europeans have to fear in Fiji and to guard against, as can generally be done by observing a few simple precautions. This is saying more for the climate and health of these islands than can be said of almost any other climate or country in the world, and certainly of those in corresponding latitudes."

Another and later correspondent says: The white pop. of Fiji is stated to be 2000. But I feel pretty certain it is over-estimated. Say it is 1200, and I think you will have the *maximum*. The native pop. has also been largely exaggerated. It has been put down at 150,000, while I am sure it has never been more than 80,000 or 90,000; and now I do not believe it is more than 60,000 or 70,000.

In 1875 a severe outbreak of measles occurred (contracted by one of the leading chiefs while on a visit to Sydney). It spread over all the larger and smaller islands of the group with frightful rapidity. In the mountains of Viti and Vanua Levu it annihilated whole tribes. The Windward Islands were decimated; and it was confidently estimated that when the disease should have worn itself out, fully one-third of the native pop. would have disappeared. At least 20,000 have died.

FILIPOWSKI, HERSCHEL E., F.R.S., MATHEMATICIAN AND LINGUIST.—In the latter capacity he held a foremost place. He was conversant with the Polish, Russian, Latin, Hebrew, Arabic, Spanish, French, German, and Chinese languages; and it was one of his ideas to lay down the basis of a universal language throughout the world.

Mr. Filipowski was a native of Poland, and was born in 1817. He gave early promise of attaining an eminent position in the world of science, and this promise was to some extent borne out in after-life. While quite young, he pub. *An Almanack for* 100 *Years*, both in the Polish and Russian languages. Circumstances arose by which, in 1840, he was led to visit England, where he received an appointment in one of the public schools as a teacher of the Oriental languages, which position he held for about a year. Subsequently he became connected with the *Colonial* and *Standard* L. Offices of Edin., as assistant computer, for which his peculiar knowledge was well adapted. We believe he occupied this post for about eight years. He was Act. of the *Mercantile, Professional, and Gen. L.* during its brief career. He was also assistant computer in the *Royal*, and afterwards in the *Briton*.

While in Edin. he became a member of the Hebrew Antiquarian So., in connexion with which he pub. many important and valuable works in Hebrew.

He pub. the following works falling within our subject:—

1849.—*A T. of Anti-Logarithms, containing to seven places of decimals natural numbers answering to all Logarithms, from* ·0001 *to* ·99999; *and an improved T. of Gauss's Logarithms, by which may be found the Logarithm to the sum or difference of two quantities whose Logarithms are given. Preceded by an intro., with an appendix containing a T. of Annu. for* 3 *joint lives, at* 3 *p.c.—Carlisle.* 2nd ed. revised and corrected 1851; 3rd, 1861. "All that could be wished in extent, in structure, and in typography. For its extent it is unique among modern T."—*De Morgan.*

1853.—Mr. W. T. Thomson, in the preface to his *Actuarial T. Carlisle* 3 *p.c.* says: "I cannot conclude without referring to the valuable assistance and suggestions I have received from Mr. H. Filipowski, not only in the labour of the calculations, but in the processes employed. I mention in the body of the work the most valuable of his suggestions, but I take this further opportunity of marking my appreciation of his services."

He contributed a letter to vol. iii. of *Assu. Mag.*, on the "proper expression for the amount of £1 with the fractional part of a year's int." This letter is answered in vol. iv. p. 72. The rejoinder of Mr. Filipowski is contained in vol. iv. p. 243, and a postscript thereto, p. 253.

In vol. viii. of *Assu. Mag.* (1858) there is a letter by Mr. Peter Gray: "On certain statements pub. by Mr. Filipowski."

1857.—*Napier's Canon of Logarithms*, which he translated from the Latin text; and he included in it a T. of Hyperbolic Logarithms to all numbers from 1 to 1201.

1864-6.—He edited *Baily's Doctrine of L. Annu. and Assu.*, "enlarged from the original ed., with a variety of T.," 2 vols. Their appearance and utility is much enhanced by the substitution of the modern notation for the clumsier one of a former day. It is needless to say that the works of Baily are classical in the science of L. contingencies. The multitudinous forms of annu., rev., endow., survivorship, etc., etc., are treated with great clearness and precision in the first volume; while the second deals in a similar manner with purely monetary interests for a given time certain. Both volumes are enlivened by examples and solutions.—*Paterson.*

1865.—*Key to Prems. for L. Ins. as charged by all L. Assu. Cos. in Gt. Brit. estab. previously to* 1865, *for all ages between* 20 *and* 60 *to insure* £100 *payable at death, either with or without profits.* This was afterwards given in vol. ii. of Baily.

1868.—He commenced the pub. of the *Actuarial Mag.*, a T. of the contents of which we have given in our notice of that pub. It never attained any position of importance.

Mr. Filipowski's typographical knowledge was of great value to him in the pub. of his scientific works, and he had several founts of type at his own home by which he could himself set up many of his most intricate notations. He invented a fount of Hebrew type with points attached to each letter, and in 1862 a Hebrew and English Prayer Book was printed in it. Only a few months before his death Mr. Filipowski completed a

Hebrew and Roman Almanack from the year 1 A.D. to Perpetuity, which is, we believe, quite a novelty in its way.

In May, 1871, he was engaged in a controversy in the *Ins. Record* regarding the mechanical arrangements of T. of Logarithms.

He died at Brixton 13th July, 1872, aged 55.

FILTH DISEASES.—Mr. Simon, medical officer of the Privy Council, in his 2nd Rep. (new series), 1875, to that body, gave an essay bearing the distinctive title of "Filth Diseases." He first explains medically the poisonous operations of filth, next illustrates the different ways in which mismanagement enables the poison to reach us, and then discusses from beginning to end the means and appliances of filth-prevention.

Under the first head, and after having laid down the two general propositions that the half-million of deaths ann. regis. in Eng. are more numerous by about 125,000 than they would be if existing knowledge of the chief causes of disease, as affecting masses of pop., were reasonably well applied throughout the country, and that the influences hostile to life are operating far more vehemently in some localities than in others, Mr. Simon says that, among the many causes which affect the public health injuriously, there are two gigantic evils which stand conspicuous—first, the omission (whether through neglect or want of skill) to make due removal of refuse matters, solid and liquid, from inhabited places; and, secondly, the licence which is permitted to cases of dangerous infectious disease to scatter abroad the seeds of their infection. In a very large number of instances immense injury arises from the co-operation of these two evils, by reason of the special facilities which certain forms of local uncleanliness provide for the spreading of certain specific infections. The influence which uncleanliness exerts in this way makes so large an addition to its influence in other ways that, in total power, it must without doubt be reckoned as the deadliest of our present removable causes of disease. In stating this Mr. Simon does not refer to uncleanliness as measured by any high standard, but only to such degrees of it as fall, or ought to fall, within the designation of Filth; to degrees which, in most cases obviously and in others under but slight mask, are such as any average man or woman should be disgusted at—such as, eminently, the presence of putrescent refuse matter, solid and fluid, causing nuisance by its effluvia and soakage, and suggesting subject-matter for sewers and scavengering.

Mr. Simon passes on to say that the excess of disease in filthy places is not always due only to the filth, and he enumerates other causes which may be in conjoint operation; but, notwithstanding these, the hurtfulness of the filth is certain. Its mere presence apparently (apart from other influences) will cause the infants and children in a given district to die at twice, or thrice, or four times their fair standard rate of mort.; and this disproportion, which becomes even more striking when the chief epidemics of childhood are left out of the account, seems to mark the young lives as finer tests of foul air than are the elder and perhaps acclimatized pop. The complete identification of the disease produced by filth is hindered by its power to modify or aggravate morbid conditions which may have arisen from other causes; but of the maladies distinctively due to its operation the most characteristic are the diarrhœal, including common diarrhœa, enteric or typhoid fever, and cholera. The argument which applies to the discharges of cholera and enteric fever, and which in regard of them rests on a very large quantity of detailed evidence, seems to extend to every other disease, whether "common" or "specific," in which the human intestinal canal is the seat of infected changes, and to every general infection in proportion as it infects the bowels; so that it seems probable that air and water, having in them the taint of human excrement, must often carry with them, wherever they pass, the seeds of current epidemic diseases. Besides this there is much evidence that the common septic ferment, as it is called, which is always present in decomposing organic refuse, so modifies the vital condition of those who are exposed to its influences as to render them especially prone to suffer from various forms of blood-poisoning or erysipelas; and that it also tends to the development in them of tuberculous and other maladies, which may then be indefinitely transmitted by inheritance to future generations.—Vide *Times* review of the Rep. [FEVERS.] [PUBLIC HEALTH.]

FINAL ADJUSTMENT OF FIRE LOSSES.—See FIRE LOSSES, ADJUSTMENT OF.

FINANCE OF LIFE INS.—See LIFE INS. FINANCE.

FINANCIAL INS. CO. LIM., "FOR FIRE, LIFE, AND GUARANTEE."—Founded 1864, with an authorized cap. of £1,000,000, in 50,000 shares of £20. First issue 25,000 shares. The Co. was named in view of the attention then being paid to Finance Cos.

The prosp. said the Co. was estab. for the purpose of extending the benefits of L., F. and Guar. bus. generally throughout Gt. Brit., France, Europe, India, the Colonies, and other parts of the world; and to offer greater facilities for effecting the same at such reasonable rates as experience had found to be safe and practicable.

In 1865 a vigorous effort was made to place the cap. The first page of an extended broadside was filled with the names of Directors and Officers in Eng., and of Councils of Administration in France, Italy, the Mauritius; and Lord Malden was the Chairman of the Co., Mr. Charles C. Green the Man. The prosp. said:—. . . .

2. *L. Assu.* has made rapid progress in this country during the last 20 years, yet at the present time there is not 7 p.c. of the pop. assu., and although it is beginning to attract serious attention in France,

> Belgium, Germany, and Italy, yet there is not in all Europe 2 p.c. of the pop. assu.; there is therefore no limit to the vast field open to this Co.; and it only requires care, energy, and perseverance, with careful attention to the interests of the assu., to obtain a business unlimited in amount, with proportionate benefits to the shareholders and the public.
>
> 3. The L. pol. of this Co. are indisputable. Felony and fraud alone excepted. . . .
>
> 5. *F. Ins.*—It is well known that there is property amounting to upwards of 2000 millions uninsured in this country alone, and in France there is a still greater amount uninsured, and as the duty on F. Ins. will no doubt be shortly taken off, or reduced to 1*s.* p.c., the increase in this bus. will be very great, and offer ample and profitable employment for this Co.
>
> 6. *Guar.*—There are only two old-estab. Guar. Sos. in Eng., and in other countries there is no inst. of the sort. It is, therefore, believed that there is ample room for the Co.'s operations in this branch of bus., viz. Guaranteeing Gov. Contracts, Gov. Officials, Receivers in Chancery, and of rents, and of all persons requiring security. [FIDELITY INS.]
>
> 7. The influential Councils of Administration already estab. in Paris, Florence, and the Mauritius, with those now in course of formation in the chief States of Europe, will, it is believed, enable this Co. not only to extend the bus. of L. and F. Ins., but also place it in a position to negociate concessions of works of public utility, and to assist States and individuals in the development of their resources, by introducing sound and beneficial undertakings to capitalists and finance cos. in this and other countries.

Then followed the usual T. of the par and present value of shares in F. Ins. Cos. which have been successful, followed by this:

> 10. These plain facts, and the very favourable circumstances under which this Co. has been estab., having received the cordial support of several old-estab. assu. offices, and secured the services, as Man., of Mr. Charles C. Green, for many years the Man. of an Assu. Co. in the City, and part of the cap. having been subs., the Directors determined some months since to commence bus., and thus practically test the promises of support made from so many quarters before bringing the Co. before the public; and they have the satisfaction of stating that they have received 1272 proposals, amounting to the large sum of £1,034,431, as appears by the books of the Co., the prems. on which they believe exceed in amount the first year's income of many existing Ins. Offices of high standing and respectability. Advantageous arrangements have been made with an estab. F. Ins. Co. for re-insuring half their risks, by which nearly 600 pol. will at once be opened by the Co. in that department. And in order still further to extend the operations of the Co. and take advantage of the offers of new bus. received from various quarters, the Directors now offer the remaining shares to the public, believing it will prove a safe and profitable investment.

The profits of the Co. were (to be) apportioned as follows: All those on the gen. bus. of the Co., and 5 p.c. dividend p.a. to proprietors, with one-fifth of quinquennial surplus on parti. pol. To the pol.-holders the remaining four-fifths of the latter.

"Gentlemen of high position" were forming Councils of Administration in Austria, Belgium, Denmark, and Sweden.

In 1866 the Co. took over the bus. of the *National Standard* Life, founded the preceding year.

In Dec. of the same year the Co. itself was ordered to be wound up—Messrs. C. F. Kemp and — Dewey, being liq. The life pol. were transferred to the *Whittington*, which however did not undertake any other liabilities.

In March, 1868, the whole of the uncalled cap. on the subscribed shares was called up. The affair in fact proved most disastrous to nearly all concerned. A "final dividend"—which we believe must be read as an "only dividend"—of 6*d.* in the £ was declared in June, 1875. Mr. William Watson Prole was one of the regis. promoters. The Count de Bigouse was Man. in Paris; the Count de Suzainecourt in the Mauritius.

FINANCIAL PANICS, EFFECT OF, ON MORT.—Careful observers have been led to believe that the effect of Financial Panics on the mort. of the commercial classes is as serious as the effects of disease epidemics upon the lower classes. There is no direct means of submitting this theory to the test of statistical verification. There is, however, an indirect test which perhaps under all circumstances may be regarded as a sufficient one, viz. the effect of such disasters upon *insured* life. It may be that, inasmuch as we here only reach the more prudent even of this class, the results will not show the full force of the operation in view.

The only statistics available for this limited branch of the inquiry of which we have any knowledge are those presented by Mr. Whiting, the Act. of the *U. S. Life*, in the last Rep. of that Co., who there examines the question in view of the experience of his Co. during the years 1857, 1861, and 1874—periods of financial disaster in the U.S.; and these show the effect on new bus. as well as on mort.

In 1858, during the prostration which followed the crisis of the previous year, the death claims increased 14 p.c., and the new bus. fell off over 20 p.c.

In 1861, following the decline of values incident upon the breaking out of the War of the Rebellion, new bus. fell off 40 p.c., and the mort. increased 70 p.c.!

In the 12 months succeeding the panic of Sept. 1873, the new bus. dropped some 20 p.c., and the payments for losses by death showed an excess of 40 p.c. over the previous year.

Mr. Whiting says: "It is proper to remark that similar violent fluctuations in the mort. of the Co. do not occur at any other period in its hist. of 25 years;" and adds:

> It would seem that there might be good practical grounds to account for the theory above propounded, in the fact of the small new bus. in each of these years being insufficient to average down the mort. by the introduction of freshly-selected lives; but this argument is partially, if not wholly set aside by the fact that in other years not disturbed by panics, when the amount of new bus. fluctuated very widely, the mort. was scarcely disturbed. It would be imprudent to rely entirely on the experience of a single co.; but from this and other reasons I would venture to suggest that the true solution lies in the direction of the morbid condition of the nervous functions during periods of

intense financial excitement, producing disease in one form or another among that portion of the public most likely to be ins., rather than from any insufficiency of new risks, or the withdrawal of the best of old risks, from financial pressure. It would be very interesting, if not profitable, if those having the charge of the necessary data in other cos. would come forward and corroborate or disprove the universality of the foregoing hypothesis. [See NATIONAL CALAMITIES, INFLUENCE ON DEATH RATES.]

FINANCIAL YEAR.—The financial years of Ins. Asso. in Gt. Brit. are by no means uniform as to the particular month or day at which they close. In the majority of instances we think it may be said they do not run with the ordinary or calendar year, closing on 31st Dec. The Assu. Cos. Act, 1870, gives (for its own purposes) the following definition: "The term 'financial year' means each period of 12 months at the end of which the bal. of the accounts of the Co. is struck, or if no such bal. is struck, then each period of 12 months ending with the 31st day of Dec. [AGENTS' BALANCES.]

The N. Y. Ins. Law (1861) gives powers to all Ins. Offices transacting bus. in that State to fix the termination of their financial year on 31st Dec., and most of them have done so, as a matter of convenience in preparing their returns for the Ins. Departments.

We think uniformity of time in closing the accounts of cos. might well be enforced. Prob. as a matter of office convenience, the 30th June would be more preferable than the 31st Dec., bus. being usually more slack in the summer than in the winter in Gt. Brit.

FINCH, DR. CUTHBERT, read before the Brit. Asso. in 1848 a paper, *Vital Statistics of Calcutta.* [INDIA.]

FINCHINGFIELD F. INS. ASSO.—This appears to have been a mut. contribution asso. founded about 1804 by a body of influential landowners and agriculturists in a village in Essex. Its bus. was of a purely local character. It paid in duty in 1805 £52 0s. 6*d.* The bus. of the Asso. was in 1829 trans. to the *Sun.*

FINE ARTS, INS. APPLIED TO THE.—In 1872 a scheme was propounded, to be called the *Artistic Ins. Trust,* "for the purpose of indemnifying artists in every branch of the Arts for loss sustained by them from accident of any kind that may happen to works of art lent for the purpose of exhibition." The project did not go forward. A full outline of the scheme will appear in our Supplement under ARTISTIC INS. TRUST.

FINE OF LANDS.—In Law, a species of fictitious conveyance or record for the settling and securing lands and tenements; now by Stat. 3 & 4 Wm. IV. c 74 (1833), rendered obsolete.

FINES IN COPYHOLD.—A sum of money payable by custom to the lord of the manor. There are 3 classes of fines: (1) those due on the change of the lord; (2) those on the change of the tenant; (3) those for a licence to empower the tenant to do certain acts. When the fine is due on the change of the lord, such change must be the act of God, and not in consequence of any act of the party. It can, therefore, only be claimed on the death of the lord. When it is due on the change of the tenant, it matters not whether that change is effected by the act of God, or by the tenant's own act. Whenever the tenancy is changed, a fine is payable. Those fines which are due on licences by the lord, to empower the tenant to do certain acts, as to demise, etc., are rare. There must be a special custom to support such fine, for by general custom fines are only payable on admissions.

Upon every admittance to copyholds a fine is due from the new tenant to the lord, unless there be a special custom to the contrary. The fine may be either *certain,* or arbitrary. Where certain, it is represented by a fixed sum, usually small in amount. Where arbitrary, it may amount to two years' rental of the property (less quit rents, but not land-tax).

Providing for fines payable on the death of copyholders forms a not unfrequent subject of LIFE INS. [COPYHOLDS.]

FINES AND RECOVERIES.—A former legal process for breaking entails. It began under Edward IV., but was not properly law until the reign of Henry VII. in 1487. Fines and recoveries were abolished in 1833.

FINITE DIFFERENCES.—In Mathematics, the designation for a series or line of differences, bounded or limited in extent, duration, etc., in distinction from infinite.

In vol. vii. of *Assu. Mag.* (1858) appeared a paper by Mr. W. Curtis Otter: *On the Calculus of Finite Differences, and its application to Problems in the Doctrine of Compound Int. and Certain Annuities.* The paper is continued in vol. viii. It is necessary to state that the substance of this paper had already appeared in a translation of M. Auguste Comte's work entitled *Cours de Philosophie Positive,* made by Prof. Gillespie of Union College in the State of N.Y.—a circumstance Mr. Otter had omitted to mention.

FINLAISON, ALEXANDER GLEN, Act. to the Commissioners for the Reduction of the National Debt, usually designated "Gov. Act.," a position which he has held since 1851—when his father, the late Mr. John Finlaison, retired from the office.

Mr. Finlaison has prepared under the authority of Parl. the following valuable Rep.

1853.—*Rep. and T. prepared under the directions of the Lords of the Treasury, by the Act. of the National Debt, on the subject of Sickness and Mort. among the Members of F. Sos., as shown by the quinquennial returns, to the* 31*st day of Dec.* 1850, *received by the Registrar of F. Sos. in Eng., under the provisions of the Act* 9 & 10 *Vict. c.* 27. [F. SOS., MORT. T. FOR.] [SICKNESS.]

1854.—Second part of same Report.

1860.—*Report on the Mort. of the Government Life Annuitants.* A valuable document, of which we have spoken in some detail under ANNUITIES; and shall have again to review under GOV. ANNUITANTS.

He prepared the elaborate T. appended to the *Succession Duty* Act—16 & 17 Vict. c. 51—passed in 1853. These were based upon *Finlaison's Gov. T.* for Males, 4 p.c.

In vol. vii. of *Assu. Mag.* (1857) Mr. John A. Higham offers some criticisms upon Mr. Finlaison's Sickness T. [F. SOS., MORT. T. FOR.] [SICKNESS.]

In vol. ix. of *Assu. Mag.* there is a letter—really a paper—by Mr. W. H. Porter, M.A., reviewing in considerable detail Mr. Finlaison's Rep. and Obs. on the Gov. Annuitants, 1860. This letter is replied to by Mr. A. H. Bailey in the same vol. Mr. Porter's rejoinder will be found in vol. x. p. 31.

Mr. Finlaison has given evidence before various Parl. Committees whose Rep. fall within our subject.

Mr. Finlaison has been retained by a large number of Ins. Cos. as Consulting Act., viz. by the *London and Provincial Law* from its commencement (1845) down to 1854. Also for the *Royal Naval and Military*, from the death of his father in 1860 down to its amalg. in 1866. In 1852 he became Consulting Act. for *Commercial Credit;* 1853 for *Gen. Indemnity;* 1854 for *London Mercantile;* 1856, *Midland Counties;* 1862, *British Mut.;* 1864, *Mut. Provident Alliance;* 1866, *United English and Scottish.*

In 1871 Mr. Finlaison was called in to make a valuation of the bus. of the *European*, then seeking to avoid the grasp of the Court of Chancery. He has been subjected to some criticism on the subject of this Rep. We have given the document *in extenso* in our hist. of that Co. A 4 p.c. *Carlisle* valuation on gross prems. required at least all the "qualifications" which are there given to it.

FINLAISON, ALEX. JOHN, F.I.A. (son of the preceding), read before the Inst. of Act. 1874, a paper: *On the Rate of Mort. found to prevail among Residents in India, being Subscribers, and the Male and Female Nominees to Subscribers, to the Uncovenanted Service Family Pension Fund, between the years* 1837-72. [INDIA.]

FINLAISON, JOHN, was the first appointed Gov. Act., *i.e.* Act. to the Commissioners for the Reduction of the National Debt. He was born at Thurso, in Caithness, in August, 1783; was left an orphan by the death of his father 7 years later; showed a taste when young for classical literature, but none for mathematics; became a "factor" at the early age of 19; soon after commenced to study for the Scottish Bar: entered the public service as a Gov. clerk in July, 1805, when Pitt was Prime Minister; at a very early period showed great proficiency in powers of organization; and finally became intimately associated with the development of the science of Life Contingencies in this country, in which aspect mainly we shall now trace his career, in chronological sequence.

1812.—He commenced the necessary investigations in view of estab. a Fund for the Maintenance of the Widows and Orphans of all who are employed in the Civil Departments of the Royal Navy. It was in this inquiry that his attention was first called to points in connexion with Life Contingencies and Life Ins. "Starting with small knowledge, he worked assiduously and ably for 7 years, during which time he mastered the principles of the subject, constructed the necessary T., matured the whole plan of the undertaking, and obtained the means of forming a So. to execute it."

1817.—He aided in the estab. of the *Naval Medical Supplementary Fund*, for providing for an ann. pension of not less than £40 add. to that allowed by the Gov. to the widows of medical officers. He became the Sec. of the Fund, and conducted its operations with great success for some years. [NAVAL MEDICAL SUPPLEMENTARY FUND.]

1819.—This appears to have been the turning-point in Mr. Finlaison's career. The *Royal Navy Fund*, upon which he had been engaged for some years, was estab.; but he now found his services called into requisition by the Treasury. The Gov. had in 1808 instituted a new system of finance, based upon the grant of life annu. The T. employed were based upon the *Northampton* T. of Mort. Mr. Francis Baily, the Baron Maseres, and others, had drawn attention to the inappropriateness of this T. for the purpose. Mr. Finlaison also had his attention drawn to the subject.

On the 1st Sept. 1819, Mr. Finlaison's first Rep. on the Annu. System was laid before Mr. Vansittart. The extensive acquaintance with the subject which it displayed indicated that it was the result of some years of obs., reflection, and study. In it he directed the attention of the Chancellor of the Exchequer to the great loss being sustained by the Gov. in granting life annu. to the public at prices much below their value. The loss he estimated at about two millions sterling in 11 years.

Mr. Vansittart's confidence in the correctness of the *Northampton* T. was very much shaken by Mr. Finlaison's report; and he directed the latter to spare no labour "in the investigation of the true law of mort. prevailing in Eng. among the class of annuitants." This involved him in the series of investigations through which we shall have occasion to follow him with some minuteness in our history of GOV. ANNUITIES; and incidentally here.

In this same year Mr. Finlaison also produced a Rep. on the Savings Bank System, as then conducted, with a view to improvement.

About this date it is recorded that his reputation had induced several members of the

Royal So. to recommend that he should become a candidate for election into that body. "He however declined to do so from motives which had their origin in the peculiar independence of his disposition. He preferred that his name should be known to scientific men from his works, and not from his being thrown casually among them."

1821.—He was engaged in computations regarding the Superannuation Act.

1822.—On 1st Jan. this year, Mr. Finlaison was entirely removed from the Admiralty to the Treasury, where he became Act. and Principal Accountant of the Check Department of the National Debt Office—in which position he continued for 29 years. The bus. of the Savings Banks was this year committed to the National Debt Office.

In 1822 he was much occupied with considerations relative to the commutation of the Naval and Military Half-pay and Pension; which measure he had suggested for consideration in his Rep. on Savings Banks. All the calculations involved were performed by him; for although by arrangement with the Gov. the Bank of England had undertaken the management of the pensions "in consideration of the 'dead weight' annu.," no person was found in the Bank capable of computing the new annu. at the fractional rate of int. agreed upon.

The measure having passed into law—3 Geo. IV. c. 51—it became necessary to ascertain the real decrement of life among the pensioned and half-pay officers of the Army and Navy. Mr. Finlaison had previously—prob. for his scheme of 1812—completed an obs. on the decrement of life among the Greenwich and Chelsea pensioners, which extended over a registry of more than 70,000 persons, including 8000 deaths; and he now made this available for the present purpose.

1823.—By the end of this year Mr. Finlaison had not only determined upon the data on which he should rely, viz. the records of the nominees of the various Gov. Tontines of Gt. Brit. from 1695 to the great Tontine 1789—which, together with the annuitants of the Sinking Fund, and an obs. on the Chelsea and Greenwich pensioners, afforded him the means of comparing more than 19,000 deaths—but he had completed a set of T. constructed on this basis, and adapted to the purposes of the Sinking Fund—as the scheme of Gov. Annu. was then designated.

1824.—During this year Mr. Finlaison's amended report was printed, and laid before the Finance Committee of the nation. He does not appear to have received much support from the Gov. during these labours: indeed we find him writing to Mr. Walpole, Sec. to the Chancellor of the Exchequer, this year, of the extreme cruelty

> Of leaving me to expend my talents, time, and labour, like a galley slave, at the rate of 16 hours a day, 11 of which were constantly employed on the calculations for the Life Annu.; and this without being able, by the most fervent eloquence, or the most pathetic complaints, to extract one shilling from the Treasury, as the records of that office will show, between Lady-day, 1819, and the month of April, 1821, save the sum of £500; and out of these my private resources, I had to pay the clerks employed, to find them accommodation, to find an extensive collection of books, to defray the expense of stationery, and all other contingencies that might arise.

1825.—A Select Parl. Committee was appointed to consider the laws respecting F. Sos. Mr. Finlaison was called before this Committee on no less than six different occasions. On his first examination he signified an opinion that sickness did not follow any general law; but he was induced to investigate the subject during the sitting of the Committee, and before its close, he arrived at the conclusion that sickness might be reduced to an almost certain law; and he furnished the Committee with an extensive body of information, which was pub. in the Appendix to the Rep. This we shall examine in detail in our art. F. SOS., HIST. OF, and also under SICKNESS.

The results of this investigation brought Mr. Finlaison a large private practice in relation to F. Sos. He furnished T. for many of these, constructed schemes for others, and sometimes undertook the entire formation of such sos.

1827.—Another Select Parl. Committee was appointed to consider the Laws respecting F. Sos.; to which was referred the Rep. of the preceding Committee. Mr. Finlaison was again a witness. He said he had very greatly extended his obs.; and he gave an outline of the data on which they were based. In the appendix are various T. and Reports furnished by Mr. Finlaison; and by Mr. F. and Mr. Griffith Davies jointly. All these will be reviewed in our art. F. SOS., HIST. OF.

1828.—It appears that notwithstanding the discouragement he had received, Mr. Finlaison continued to impress upon the members of the Gov. the loss the country was sustaining by the persistent use of erroneous T. in its Life Annu. dealings. A letter so written, and addressed to the Sec. of the Treasury, Mr. Herries, dated 30th April, 1827, was inadvertently laid before Lord Althorp's Committee on Finance in March, 1828. This letter was printed by order of the House of Lords, and the matter was brought before Parl. This ended in the immediate suspension of the then annuity system of the Gov.; and the adoption of a new system in the following year.

In a letter written by Mr. Finlaison in March, 1828, and addressed to a noble lord, praying his assistance to defend his reputation in the House of Commons when the correctness of his Rep. was impugned by the Ministry, there occurs the following passage:

> In the simplicity of my heart I fancied that a service which went to prevent the loss of millions of the public money would have been rewarded with honour and profit. I have been fatally undeceived; my salary has been stopped; I have met with nothing but envy, malice, and hatred, for my discovery; and although I have every year reiterated my warnings, not a jot of attention was paid me till now,

when my statements are called extravagant. This is the same imputation on an *actuary's* character as cowardice is on that of an *officer*, and cannot be endured.

In all this Mr. Finlaison was but sharing the common fate of all those who toil for their country, or for any branch of the public welfare.

1829.—The hour of Mr. Finlaison's vindication had now arrived. His revised and completed Rep.: *Life Annuities: Rep. of John Finlaison, Act. of the National Debt, on the Evidence and Elementary Facts on which the T. of Life Annuities are founded*, was printed by order of the Gov. This document contained in all 21 new obs. on the Law of Mort., and one on the Law of Sickness prevailing among the labouring classes of Lond. It was found that the adoption of these new T. saved a loss to the country of £390,501 in 5 years; and the total saving has been estimated at £3,000,000 sterling.

1830.—Mr. Finlaison was engaged in investigating the affairs of the *London Life*, and drew up a Rep. containing many suggestions for the future guidance of that So.

1831.—He reported in conjunction with Prof. De Morgan upon the affairs of the *Amicable* So., and in the course of the following year supplied a new set of T.

1833.—By direction of Viscount Goderich he commenced extensive computations of the duration of Slave and Creole life, with reference to the Emancipation of Slaves on the West Indian Plantations. This was preliminary to the raising the loan of £15,000,000 to compensate the slave-owners, which was carried out, and 770,280 slaves became free on 1st August, 1834.

He gave evidence before the Select Parl. Committee on "Parochial Regis.," and some points in his evidence we shall have occasion to notice under F. Sos.; also under REGISTRATION.

1834.—Dr. Southwood Smith having submitted to Mr. Finlaison the experience of the London Fever Hospital, of which he was physician, for the 10 years preceding 1834, and extending over 6000 observed cases, the latter was enabled to make the calculation regarding the mort. from fever which we have given in our art. FEVER under this date.

1835.—He was consulted by the Ecclesiastical Commissioners on the means of improving Church property; on the question of Church leases; and finally on the question of Church rates; and he made various reports on these subjects; being summoned on one occasion to attend the Cabinet, and explain to the Ministers the data on which his recommendations had been grounded.

1837.—On the passing of the Gen. Regis. Act, which was to come into operation this year, Mr. Finlaison was consulted on certain points regarding the mechanical arrangements required for regis., such as indexes, etc. In order to advise on these points, he had occasion to make estimates of the prob. number of births, marriages, and deaths. These at first were little more than rough estimates; but as he brought further consideration to bear upon the subject, he made more exact estimates; and his final Rep., dated 2nd Feb. 1839—some months before the Reg.-Gen. first return was prepared—estimated the deaths for the year ending 30th June, 1838, at 335,968, while the actual number afterwards found to have been regis. was 335,956, or within 12 of Mr. Finlaison's estimate. [REGISTRATION.]

In 1837 also he computed the T. for the *Royal Naval and Military* Life Assu. Co., of which he was one of the founders, and remained its Consulting Act. down to his death.

1838.—A Select Parl. Committee was appointed to inquire into the subject of Church leases. Mr. Finlaison was the first witness called.

1839.—He furnished the scheme and prepared the T. of the *New York Life Assu. and Trust* Co.—one of the earliest inst. of the kind founded in the U.S.

1847.—On the formation of the Inst. of Act. this year, Mr. Finlaison was elected its first President, and retained the position down to the date of his death; although in 1851 he had proposed to resign in consequence of failing health.

1848.—He completed the 2nd of his two Rep. on the Act of the preceding session for lending money to Irish landlords, with the T. necessary to give effect to it: the preparation of which had involved the dealing with points of great complexity.

Mr. Finlaison gave evidence before another Committee on F. Sos. which sat this year.

1849.—Macaulay, in his *Hist. of England* pub. this year, after enumerating the efforts which had been made to determine the pop. of Eng. in earlier times, says: "Lastly, in our own days, Mr. Finlaison, an Act. of eminent skill, subjected the ancient parochial regis. to all the tests which the modern improvement of statistical science enabled him to apply. His opinion was that, at the close of the 17th century, the pop. of Eng. was a little under 5,200,000 souls." (See Preface to Pop. Returns, 1831.)

In this year he gave evidence before another Select Parl. Committee on F. Sos.; but there is nothing calling for comment here.

1851.—In August of this year Mr. Finlaison retired from his position of Act. of the National Debt and Gov. Calculator—having been in the service of the Crown for nearly half a century. He employed his remaining days in his favourite studies of Scriptural chronology, and the universal relationship of ancient and modern weights and measures.

1853.—Mr. Finlaison gave evidence before the Select Parl. Committee on Assu. Asso. which sat this year. This evidence reads very much like an "old man's autobiography," having a sufficient spice of egotism about it to give it point. We wish we could reproduce it here. but too much space would be occupied, and to condense it is to spoil the effect. The following few passages which occur near the end will be read with interest :

637.—You have been yourself professionally called in to value the liabilities of other offices ?—I have in 5 or 6 instances, and 3 of them very great offices.

638.—What T. of Mort. did you adopt in those cases ?—I suppose the Committee are aware that I framed a T. of Mort. myself some 30 years ago!

639.—Did you invariably use that T. upon those occasions ?—Invariably. . . . I must say that I always in valuations adopt my own T., because I made it myself, and know the truth of it.

640.—Did the offices by which you were called in adopt other T. as the basis of their calculations ?—Frequently.

641.—Were they generally the *Carlisle T.* ?—No. With respect to the *Carlisle T.*, I believe it is only lately that they have come into operation with the offices ; formerly it was the *Northampton T.* that was adopted, which was much more beneficial to the assu. cos. . . .

643.—When you investigated the liabilities of those offices, what was the rate of int. at which you made your calculations ?—3½ p.c. invariably. I have also investigated the affairs of a general L. ins. office at N. Y., whose books were sent to me over sea. The mort. of N. Y. is exceedingly difficult to arrive at, because the people are essentially moveable ; but I was enabled, from the experience of the office itself, which was of 10 years' standing, and which was very large, to determine the rate of mort. there ; and I found that the result with regard to the rate of mort. was the very same that it is in Eng.

644.—Are you of opinion that with reference to L. Assu. any advantage would be secured to the public by adopting any new legislative system with regard to them ?—I think not, unless it were by a confidential system of investigation, which I only allude to because I know of no other means.

645.—And you think that the pub. of the results of such system might be of service practically ?—The general results, not to show the amount of bus. of each office, but it might be of great importance to the Legislature to know the working of L. Ins. in the totality, which would be obtained by a system of that sort.

646.—You think that for statistical purposes—for the information of the community at large—it might be useful as a matter of public policy to interfere for that purpose ?—I think so.

647.—Are you aware, from having had experience of L. Assu. offices, old and new, of the existence of any evils which the Legislature could remedy ?—I have stated in the strongest terms that there are no evils that I am aware of.

1860.—On the 13th April Mr. Finlaison died, aged 76. In vol. x. of *Assu. Mag.* is contained a memoir of him, from which we have drawn many of the preceding facts.

FINLAISON'S Tables.—See Gov. Annu. T.

FINLAY, Gilbert Laurie, was Man. of *Edinburgh* Life from 1833 to 1866, during the greater part of which period he occupied a prominent position in regard to Life Ins. in Edin. He was one of the originators of the "Asso. of Managers of the Life Assu. Offices in Scotland," and held the appointment of Sec. to the Asso. for 25 years. He was also one of the originators of the "Under-average Lives Asso.," and acted for 16 years as Sec. to that body. Mr. Finlay was previously a Writer to the Signet.

FINLAY, William, was Sec. of *Scottish Equitable*, from 1853 to 1868.

FINLAYSON, Dr. James, M.D., Glasgow, contributed to the *Glasgow Medical Journal*, 1874, a paper : *On the Hours of Maximum Mort. in Acute and Chronic Diseases.*

FINN Rule of Adjusting Fire Losses.—Mr. Finn was Sec. of *Long Island* Ins. Co.; and he estab. a mode of adjusting fire losses in regard to "specific," "floating," and "general" pol., which we shall have to notice in some detail under Fire Ins. Losses, Adjustment of.

FINSBURY Mut. L. Assu. Asso.—Founded in 1847, under the powers of the F. Sos. Acts, for the purpose of granting L. pol. and endow. from £5 to £200, "free of pol. stamp and legacy duty." The Asso. purported to have a "guar. fund of £10,000." Its place of bus. was 53, Exmouth St., Clerkenwell. The prosp. said :

> This Asso. . . . is for the purpose of affording the greatest facility to tradesmen, operatives, and all those whose incomes cease with their lives, to secure a provision for those dependent upon them for support; also for a sum of money to provide for themselves in old age, and for endow. for [illegible]ir children ; to provide apprenticeship prems., etc., by means of ***monthly payments*** ; it being th [illegible]tive duty of all persons to provide, as far as their means will allow them, for their fami[illegible] to guard against those ills which sooner or later must fall upon them. . .

"Persons of delicate health and ruptured persons are ins. on equitable terms ;" "and should the party live for a specified term, he will then receive the benefit of his extra rate of payment. These form a distinct class."

Mr. W. H. Pratt was the Sec. The fate of the Asso. we do not know.

FIR Wood.—The *Amsterdam Ins. Ordin.* of 1744 contains this somewhat remarkable art. : "VIII. But he who causes himself to be ins. on the hull or body of a ship built of Fir Wood shall particularly insert it in the pol., mentioning that she is built of Fir Wood, on pain that otherwise the underwriters shall not be obliged to pay more than half the loss that might happen."

We do not remember to have met with a similar clause elsewhere.

FIRE.—Until a comparatively recent period fire obtained a place among the elements, and was considered to be a constituent part in the composition of all bodies, and to require only the concurrence of favourable circumstances to develope its activity. We now know that fire is the result of combustion of inflammable substances, aided very largely by properties in the atmosphere.

We have only to consider the subject in regard to its bearing upon the contract of F. Ins. The necessity for defining what is a loss by fire within the meaning of the term as used in ins. pol. has frequently arisen. It is clear that damage may arise as a consequence of fire which is not precisely and directly damage by fire. Thus, for instance, lightning is fire, and is capable of burning, but it frequently destroys or injures by the force of the electric current, as when stone or brick-work is dislodged on being "struck," as it is termed. Again, great destruction is often caused by the explosion of gas, without any combustion of the destroyed material. The bearing of some of these considerations upon the contract of ins. has already been discussed under EXPLOSIONS; and will be further considered in articles GAS and LIGHTNING. The simple rule for determining the question of what is fire within the meaning of a fire pol. is to decide whether there has been *actual ignition* of what is insured.—*Ins. Agent.*

In actual practice F. Ins. covers a wider area than that last indicated. Goods damaged by smoke or steam, resulting from fire, or from water employed (with prudence or otherwise) in extinguishing fires, are all brought within the range of F. Ins. indemnity.

We hope in the following series of articles to treat of F. Ins. and its incidents exhaustively.

FIRE-ACT CHURCHES.—The *Fire of Lond.*, A.D. 1666, left intact the churches surrounding the ruined city. The space from the Temple to the Tower, forming a sort of arc northward, the fire never touched. It ate out only the heart of the city bounded by this arc and the river; and within this area about 100 churches were destroyed, including the Cathedral, and it was in substitution of these 100 churches that the present churches, called Fire-Act Churches, were built. Their number was 51; it is now only 44. St. Christopher-le-Stocks was swept away by the Bank of England; St. Michael, Crooked Lane, St. Benet Fink, and St. Bartholomew, have been taken down under the Act or Acts for the London Bridge approaches. King William the IV.'s statue stands on the site of what was the church of St. Michael, Crooked Lane; the statue of Mr. Peabody on the site of St. Benet Fink, and the *Sun* Fire Office occupies part of the site of St. Bartholomew. St. Benet, Gracechurch Street, and St. Mildred, Poultry, have been sacrificed for the widening of the thoroughfares, and St. Mary Somerset has yielded to the spoiler for other purposes, so that of the 51 Fire-Act Churches, 44 only remain. [1872.]

FIRE ALARMS.—This is a generic term, which may mean several things. It may mean what is technically known as FIRE CALLS, and which we shall speak of under that head. Again, it may mean "Fire Detectors," or mechanical appliances for indicating the presence of fire, or of undue heat. These will be spoken of under FIRE DETECTORS and INDICATORS. Or, finally, it may mean "Fire Telegraphs," which have been spoken of under the last-mentioned head. We here apply the term "Alarms" to such occurrences as the following:

On the 17 Nov. 1835, 12 engines and 74 men were kept in constant motion from 11 P.M. to 6 A.M. in pursuing an apparently extensive conflagration, which afterwards turned out to be the *Aurora borealis.* Some of the engines reached Hampstead, and others Kilburn, before the mistake was discovered. Not long afterwards a glare of light in the sky at 4·30 A.M. attracted the engines eastward. Some reached Ratcliffe Highway, some Commercial Road, some Mile End. It was only the rising sun; but on their way home they really encountered a fire. Again, in 1836, 18 Oct., the *Aurora borealis* produced a vivid crimson glare in the horizon as early as 8·30 in the evening. Thirteen engines and a large body of firemen started to the supposed conflagration; many persons on foot and in carriages also started for the supposed scene. This alarm was not confined to Lond.; at Dublin, Leyden, Utrecht, Strasburg, Troyes, Rennes, and Nantes the same fears were aroused, and military and engines turned out.

In the autumn of 1871 the *Aurora borealis* again caused great alarm at many of the principal stations of the Metropolitan F. Brigade.

FIRE-ALARM TELEGRAPH.—See FIRE CALLS.

FIRE ANNIHILATORS.—Under this head we propose to speak of a certain class of chemical compounds which have been designed, and in some cases used, for the purpose, or with the intention, of extinguishing Fires. These are not unfrequently accompanied with mechanical contrivances for ejecting the compound, while in other cases the chemical compounds are used to expel the water. But in no case do we contemplate under this head speaking of Hand Engines, F. Engines, or other appliances for fire extinguishment by the aid of water without chemical ingredients.

We find it recorded in hist. that the Greeks during their wars with the Romans caused the wooden towers then used in battle to be washed over with a solution of alum, by which means all attempts to set these on fire were rendered abortive. It is not necessary to go back further. We know that powerful sun-glasses were employed in these early times for the purpose of igniting ships and other wooden structures.

1444.—There was a fire at St. Paul's, which is thus described in *Seymour's Accurate Survey of the Cities of Lond. and Westminster*, pub. 1736: "On Candlemas Eve, in the year 1444, about 2 o'clock in the afternoon, the steeple of St. Paul's was fired by lightning in the middle of the shaft or spire, both on the west side and on the south; but by the labour of many well-disposed people, the same (to appearance) *quenched with vinegar.*"

1706.—The first inventor in Eng. of a machine falling within the designation of a F. Annihilator was Charles Povey, founder of the *Sun* F. Office, which office he was said by some of his contemporaries to have founded really in view of bringing his invention into use. We find no detailed description of his machine.

1722.—The *Lond. Journal* of Dec. 15 contained an account from Paris of an experiment by a new fire-extinguishing machine, invented by a German—Zachary Greyl. The experiment took place before M. Le Blanc, Sec.-at-War, Cardinal du Bois, etc. One of the barracks was filled with faggots and other combustible materials, and set on fire. When it was all in flames, M. Le Blanc ordered the German to extinguish them. The machine was a vessel fixed on a small wheel carriage, and contained about half a hogshead of water. In the middle of it was a kind of granado, with a match fixed to it by the bunghole of the vessel. The match being lighted, he withdrew, and immediately the granado and vessel burst, extinguishing the flames, although they mounted to a considerable height above the barracks. The German and his people then entered the barracks, and entirely put out the remainder of the fire with a few buckets of water. The experiment gave thorough satisfaction to the spectators. "The only difficulty (says the chronicler) which seems to attend the operation is how to get the machine in time to the upper floors of houses." Greyl kept the details of his invention a secret, and required either a large prem. from the Crown or a subs. to be raised by private persons. But neither of these proposals was accomplished, and he died without revealing the discovery. Two years after his death the person into whose hands his papers fell made the discovery of the method. The plan was shown before the King of Poland, and a great concourse of nobility at Dresden; and then the secret was sold for a considerable sum. After this the invention was exhibited in Paris and elsewhere, attracting considerable attention. The contrivance consisted of a wooden vessel holding a considerable quantity of water, in the centre of which was fixed a tube of gunpowder, with a fusee attached. The force of the explosion drove the water into all parts of the room with great velocity, and so extinguished the flame. In the case of actual fires, as distinguished from the artificial ones at which the experiments were made, the difficulties were much greater, and indeed the machine was powerless. We are to hear much more of it in various phases.

1724.—There was pub. *An Account of the New Method of Extinguishing F., Introduced by Ambrose Godfrey, of Covent Garden, Chemist, Written by the Introducer.* After an introductory description of F. Engines as then constructed, which he fancifully designates "water-serpents," in view of the hose attached; and after also stating that the then existing "instruments" were quite inadequate to the extinguishment of fires, he proceeds with the following remarkable description:

The New Method consists of Gunpowder closely confined, which, as soon as animated by Fire, acts by its elastic Force upon a proper *Medium*, and divideth it instantly into Millions of Millions of most minute and imperceptible Atoms, which with equal Violence and Swiftness are immediately forced into the innermost recesses of the Flames, and insinuating themselves into the Very Pores of the Walls, Ceiling, Floors, and Moveables contained in the flaming Appartment, at once touch and utterly extinguish the Fire.

The just now mentioned *Medium, is Water impregnated with a certain Preparation an Enemy to Fire.* By the Water thus qualified a most considerable advantage is obtained, viz.: Wherever it touches the burning Materials, there it deadneth them to a Black Coal; and by its Antagonist Nature to F. hindereth the remaining live Sparks, however agitated by the Air, from regaining so readily a power of reinflaming the extinguished parts: by which Time enough is allowed to Servants or other Assistants to enter the extinguished place, and with wet Mops to expunge the few remaining fiery characters.

Description and Use of the Machine.—The Constituent Parts of the Machines are The *Shell*, and The *Powder Magazine*. The Shell is a small Wooden Barrel with wooden Hoops; in the middle of the Top an opening is left for a Fuze to pass through. This Barrel is cased without, and well lined within, the better to hold the Liquid: which is a Mixture that never corrupts or alters; when, on the contrary, meer Water would soon putrify and stink. The Powder Magazine is a Vessica of Sphæroidal Figure, either of Pewter or some other lasting Substance, filled with Gunpowder, having on one end a Pipe which pierces the Top of the Shell in the middle, and serves to guide the Fuze to the Main Magazine. This Powder Magazine is fixed in the centre of the Shell, encompassed with the above-mentioned Liquid. The Fuze is garnished with Wild-fire, secured with a Tin Cover lined, to be taken off when the Machine is to be used. Let him who throws the Machine first take his Aim at a convenient place before he lights the Fuze.

This was really Greyl's invention, with some slight modifications. (See 1761.)

1734.—Herr Fuches, a German physician, invented balls composed of chemical ingredients, and which, when thrown into fire, burst with violence, and "instantly quenched the fire." These he called "water-bombs." They were almost certainly an adaptation of Greyl's invention.

1754.—About this date Dr. Joseph Black, a Scotch chemist of considerable fame, discovered the properties of carbonic acid gas, which he termed "fixed air;" he showed that it consists of two parts of oxygen and one part carbon. Subsequent discussion led to this compound being employed in the extinguishment of fires.

1761.—A Dr. Godfrey (prob. the same spoken of under date 1724, or a descendant) erected a house in Marylebone, and got up a public exhibition in order to see the same ignited, and then extinguished by the process already described. He carried the arrangements through with success.

In the same year Herr Greyl's invention came to the front again, when it was st that alum and sal ammoniac were the ingredients employed.

Regarding fires in chimneys, we find the following in the *Ann. Register* of this y "The surest and readiest method is to take a little gunpowder, and having humect with spittle for binding it, to form it into small masses, and so throw it into the hear the chimney. When it is burnt and has produced a considerable vapour, a second, a wards a third, are thrown, and so on, as much as is necessary. In a little time the is extinguished, and, as it were, choaked by this vapour; and cakes of inflamed soo seen to fall from the tunnel, till at last not the least vestige of fire appears."

1764.—The *Ann. Reg.* for this year says: "A new machine for extinguishing by a chemical explosion has lately been invented at Paris, and is already in such repute that it is said the inventor has made his fortune by it. And some very succe experiments lately made by order of the Intendants of Marine at Brest, where an old r of-war was fired in each hatchway, and extinguished by throwing in the above mach have occasioned that few ships of war or merchantmen now go to sea without them."

1767.—Under this date we find in the *Ann. Register* the following: "Mingling p ash with the water in engines for extinguishing fire has been discovered to be very effe for that purpose."

1783.—In Dublin about this time the following "prescription" was in use, as a pound liquid for extinguishing fires—*Ad ignem cito restinguendum*: Burnt alum, 30 green vitriol pul., 40 lbs.; cinabresi, or red ochre, 20 lbs.; clay (potter's, etc.), 200 l water, 630 lbs.

1792.—Public experiments were made in Stockholm by Herr Von Aken, who, u a composition of sulphate of iron, sulphate of alumina, red oxide of iron, and clay, reported, with the assistance of 2 men, to have subdued an artificial fire that would l required 20 men and 1500 measures of simple water, he only using 40 measures o compound.

In the same year Herr Nil Nosheim made many public exhibitions in order to p that combustible materials might be made perfectly incombustible.

Mr. W. Knox, of Gottenburg, also directed his attention to the same subject.

To extinguish fires in chimneys, said the *Ann. Register* for this year: "Put upon fire in the grate, which must be left burning, as much salt as you can collect—a pec more will be quite sufficient—which will bring all the soot that is on fire in the chim and extinguish it before any injury happens."

1794.—Dr. Van Marum tried a series of experiments with the materials employe Von Aken, and also with plain water, and found the latter quite as effective as the form for instance, he succeeded in extinguishing a fire in 2 casks covered with pitch, and ignited, with only four ounces of water.

A new ed. of Dr. Godfrey's book, quoted 1724, was printed, and attracted consider attention. The following is the full title:

"*An account of the new method of extinguishing fires by explosion and suffocation, in duced by Ambrose Godfrey, of Covent Garden, Chymist, wherein a description is given o several machines and their uses, together with plain and sufficient directions for the pr application of them; a method easily practicable, certain in its effects, and so univers useful to the publick that His Majesty has been moved to authorize and incourage this h discovery, for the general advantage of his subjects, by his most gracious letters patents.*"

1816.—Captain Manby invented a portable apparatus to be carried in hand-carts, of which was to carry 6 of his machines. These latter consisted of a strong "co vessel, of a cylindrical form, 2 feet in length and 8 inches in diameter, capable of hol 4 gallons. . . . Three gallons of water holding in solution any ingredients adapted to extinguish fire (pearl-ash dissolved in water is good) are to be put into vessel, and then the room remaining for the fourth gallon to be filled closely with densed air. . . . The condensed air expels the water to the extent of its force. It was proposed to have relays of these machines at each watch-house, for the watc firemen to use." . . .

The invention was brought under the notice of the fire offices of that period, but not "taken up."

1828.—Mr. W. R. Dickinson proposed to use salt in the water thrown by the eng for extinguishing fire, and suggested that a reservoir of brine might be kept ready at waterworks.

1837.—An application was made to the Patent Office of the U. S. this year by Wm. A. Graham, Lexington, Rockbridge County, Va., in regard to a species of a hilator very constantly referred to in this art. Mr. J. W. Hand answers the applicat under date, Patent Office, 25th Nov. 1837, as follows:

> Your application for a patent for the application of carbonic acid to the extinguishment of has been examined, and your specification is not found to present any practicable mode of carr your plan into effect; nor, indeed, is it believed to admit of being carried into operation. abstract principle that carbonic acid will not keep up combustion is, as you are aware, known. If you have devised any mode by which this principle can be applied, you have not mad known so as to instruct firemen in its use. Besides the utter impossibility of keeping soda or ra seltzer fountains, charged with carbonic acid, it is a fact that were they so charged the water c not be projected from them upon a fire at the distance of twenty feet, but would, from elastici

> the contained gas, be diffused laterally in spray, at a much smaller distance than that maintained; and had you charged it with a quantity giving a pressure of five atmospheres, not one would remain in it at the distance of three feet from the pipe or nozzle. Carbonic acid has no tendency whatever to extinguish a fire, only so far as it prevents the access of atmospheric air and the consequent supply of oxygen. In our common fires and furnaces, the upper portion of the burning fuel is contained in an atmosphere composed almost entirely of carbonic acid and nitrogen, but is not extinguished thereby. Water extinguishes fire by reducing the temperature below the point of ignition, and also by its conversion into steam, in which change it absorbs a large amount of heat, which becomes latent or heat of capacity. Under these considerations your application cannot be granted, your invention not presenting that novelty and utility which would justify this office in issuing a patent.

1841.—Phillips's Patent Fire Annihilator attracted a good deal of attention. It is a portable machine for the immediate production of steam, and carbonic acid, and other gases, which, being directed upon the burning matter, is found to check the progress of the flames more speedily than the usual application of water. The following description is from Dr. Ure's *Dict. of Arts*, etc., 1867:

> The machine is cylindrical in form, and slightly conical. For use it is charged with the following composition: Charcoal 20 parts, nitrate of potash 60 parts, and gypsum 5 parts. These materials are boiled together in water, and afterwards dried in a stove at the temperature of 100°. The whole is moulded into the form of a brick, down the axis of which penetrates a hollow cavity for the reception of a bottle, which contains a mixture of chlorate of potash and sugar, surmounted by a globule of sulphuric acid. The charge, so prepared, is placed in a cylindrical vessel, perforated in many places, which is itself within another cylindrical vessel, also perforated for the passage of the gases; both these are contained in a double cylindrical receiver, the lower part of which contains a quantity of water. The apparatus is closed by two covers, in the outer of which is an opening for the escape of the vapour. In the centre of the cover is placed a spike for the purpose of breaking the glass bottle deposited in the cavity of the charge. The spike being forced down breaks the bottle, and the sulphuric acid causes the instantaneous combustion of the chlorate of potash and sugar, which fires the charge. The gases now escape through the perforations, and heating the air in the water chamber, and causing it to expand, forces the water up a tubular passage into the space between and around the cylindrical vessels placed each within each, and being thus converted into vapour, mixes with the gases, and escapes by the discharge tube, forming a dense cloud, which rapidly extinguishes flame.

The advocates of Phillips's Fire Annihilators claimed for them the following merits: 1. The power of instantly extinguishing flame. 2. The power of subduing smoke, so that an entry may immediately be made into a place previously inaccessible. 3. The ready means of suppression by inmates in cases in which ordinary means are insufficient, and any delay would result in total destruction. 4. Means in aid of engines for fire brigade purposes, bringing the fire immediately into manageable compass, and saving wasteful damage by water.

1843.—Dr. Clanny, in the *Mechanic's Mag.* for this year, described the process of mixing ammonia with water used for extinguishing fires, in view of rendering the extinguishment more easy and certain: "5 ounces of muriate of ammonia in 1 gallon of water will instantly extinguish a large fire."

1844.—The *Builder* said: "The simple remedy for extinguishing fires in chimneys is, to close the door of the room to prevent draught, and sprinkle a few handfuls of common salt on the fire. It will neither cause smoke nor precipitate soot. The *rationale* of this simple process is believed to be that in the process of burning the salt, muriatic gas is evolved, which extinguishes fire."

1846.—The *Builder* again: "It is the opinion of an eminent professor that 1 lb. of pearl-ash mixed with a gallon of water (being previously dissolved in hot water, before being mixed with the cold), and thrown upon a fire, will instantly extinguish it, if of ever so combustible a nature. Water-carts containing this mixture have for a considerable time past been employed at Liverpool to accompany the fire brigade when called out; also at Plymouth and Davenport."

1848.—Dr. W. Reid said in the *Builder*: "Throwing dilute sulphuric acid over chalk, which is to be thrown down in the place where the fire rages, will set at liberty, in the space of 2 or 3 minutes, enormous volumes of the so-called fixed air, thus producing carbonic acid gas; and as combustion cannot go on in an atmosphere of carbonic acid gas, the fire will be immediately extinguished."

1850.— Experiments were made and demonstrations given at the London Gas Works, Vauxhall, by Mr. Phillips, in regard to his F. Annihilator, which revived the interest in that invention.

1851.—The Jury of Class X. at the Great Exhibition, 1851, which consisted of Sir J. Herschel, Bart., Sir David Brewster, Mr. James Glaisher, and other leading scientific men, said in their Rep.:

> Chemistry and chemical apparatus need not detain us long: the Exhibition presenting little (in Class X.) that is new, excepting the application of the former to the extinguishing of fires by Mr. Phillips, . . . who has successfully brought this element under our immediate control by the agency of carbonic acid gas, nitrogen, and aqueous vapour. His contrivance, by which these agents are evolved, differs materially in its action from that of water, which simply cools the burning substance to a temperature too low for the existence of inflammable gas, but does not at all interfere with the current of fresh air, every accession of which is attended with a fresh increase of combustion. The chemical agents constituting the gaseous vapour generated by this machine, on the contrary, are highly inimical to fire, chiefly from the fact of their entirely preventing all access of pure air to the burning mass. There is another patented application of this kind, but we are ignorant of its details of application.

The other F. annihilator exhibited was by Mr. Weare; but we find no account of its performances. [FIRE EXTINGUISHMENT.]

1853.—The Superintendent of the Leeds Fire Brigade said: "From the practical experience I have had, I cannot hesitate to bear my testimony to the utility and value of the fire annihilator, particularly for the use of a fire brigade in aid of the engine; as by means of these flame is instantly got under, and the dense smoke absorbed or dissipated, and thereby the efforts of the firemen most materially aided, and premises and stores saved from wasteful damage by water." [We, the present writer, saw a remarkable instance of the value of an annihilator in speedily subduing a fire which had broken out in stored flax.]

1854.—The *Quarterly Review* for Dec. said: "There can be no doubt that in all confined places the control of the annihilator over the flame is omnipotent—acting much more speedily than water, and, unlike that element, doing no damage. When the flames are unconfined, the annihilator will prove of little use, because the gaseous cloud that issues from it not being heavier than the air, it cannot be projected to any distance. As an auxiliary to the engine it will be invaluable in many cases."

1856.—Mr. J. E. B. Curtis, Sec. of the Fire Annihilator Co., contributed to the Journ. of the So. of Arts a letter: *The Fire Annihilator as a Means of Suppressing Fires*, in which some remarkable instances of the use of the invention even at that early date are given.

1862.—The *Brit. Fire Prevention and Ins. Co.* was projected. It was part of the scheme to supply its patrons, in the way of ins., with Phillips's Annihilator on easy terms; and the rates of prem. were to be fixed with regard to the facilities for extinguishing fires. The project fell through.

During this year L'Extincteur was invented by Dr. F. Carlier, and patented by Mons. A. Vignon.

1866.—"L'Extincteur" was introduced into Lond. by Mr. E. Casper, under direct licence from the inventor. In Dec. of this year a series of experiments were made in the presence of Captain Shaw, the chief of the Metropolitan F. Brigade, who was accompanied by Mr. Hamlin, of the Southwark Bridge Road Station, Sup. Mitchell, the engineer of the Kilburn Volunteer Fire Brigade, and several directors of ins. cos. and scientific gentlemen from various large firms in the city. One of the experiments was very striking. A large wooden tray, some 12 or 14 feet square, was covered with pitch, petroleum, and other inflammable materials, and on being set fire to, a body of flame rose some 20 or 25 feet high. But upon a small jet of the composition from the Extincteur being thrown on it, the fire was completely extinguished in about a couple of minutes, whereas it was stated by those practically versed in the extinction of fires that if water had been applied it could only have had the effect of spreading it. An extemporized staircase was also set on fire, and blazed away at a great rate until a jet of the composition was thrown on it, when it was reduced at once to a piece of charred wood. In like manner a sort of outhouse, stuffed with shavings and tar-barrels, was ignited, and produced a fearful body of flame, which, however, was just as easily extinguished. It was admitted that in the event of a house being thoroughly on fire the Extincteur would be of little use; but it was quite evident that in the event of any sudden outbreak of flame in a room, or building, any one by the aid of this machine could extinguish it.

1867.—The *Journal de l'Assureur et de l'Assure* gave an account of some interesting experiments which were made in Paris for the purpose of comparing the mode generally adopted for putting out a fire with a new system of employing extinguishing cartridges (*cartouches extinctives*) mixed with ordinary water, in the proportion of 1 cartridge to 15 or 20 litres of water. A pile of very dry wood was prepared on which to try the experiments upon a larger scale. This wood, after being well tarred, was also thickly covered with the sediments of varnish and petroleum oil, all of which are extremely inflammable and difficult to extinguish when on fire by an engine, unless there is a considerable quantity of water at hand. It is generally known, in fact, that if a jet of water is directed upon a very fierce fire, a part of the water evaporates and combines itself with the burning wood, emitting a considerable quantity of hydrogen, which helps to augment the flames rather than extinguish them. Thanks to the cartridges, the flames are instantly subdued. This result is easy to understand. The cartridges are composed of earth and of a salt, which, dissolved in water and thrown upon a fire, produce a gas which instantly combines itself with the oxygen of the air, and by that means prevents the creation of a flame. Two minutes were sufficient to extinguish the burning pile of wood of which we have spoken, by an engine served with water in which cartridges had been mixed. A much longer time was required to extinguish a second fire of the kind by the ordinary means. The two principal advantages claimed for the new system are—1. The power of being able to subdue a fire in a very short space of time, and with about 1-10th of the water required under the present system. This latter is important in connexion with fires in the country where water is scarce. 2. The being able to extinguish the flames, or to prevent their production. In the case of manufactories and farms the flames cause the conflagration to spread to neighbouring property, and thus render futile the efforts made to circumscribe the fire. The cost of these cartridges is not much, so that a certain number could always be kept in readiness. This new composition can be mixed with the water either at the time required to be used or previously. The inventors were M. Aime Maurice and M. Muterse, a chemist.

Mr. F. W. Devey pub.: *Speculations on the Method of Extinguishing Fires without Water.*

Mr. Dick invented a "Portable and Self-acting Chemical Fire Engine," stated to be always ready for use. It is a contrivance contained in a tin case, with straps to pass over the shoulders, so that it can be carried on the back, while the jet is conveniently placed for being guided by the right hand. It is said many thousands of these have been sold during the last few years. The price varies from £4 10*s.* to £6 6*s.* Trade motto: "Delay makes the danger." This, we observe, is now called "L'Extincteur." (See 1868 and 1875.)

Before the Select Parl. Com. on Fire Protection which sat this year, the following evidence concerning this invention was given:—It projects a prepared fluid, which is harmless until it touches the fire, and then it disengages carbonic acid which destroys the fire. Two powders are mixed together in the vessel like seidlitz powders. The liquid is in a state of effervescence, under pressure, like soda-water; and when the tap is turned the fluid is projected according to the pressure within. The fluid is perfectly harmless, and may be drunk without injury. It destroys nothing with which it comes in contact except the fire. The gas is only liberated on touching the fire. The Extincteur may be so used as to localize the effect whether on the ceiling or otherwise. In ordinary annihilators this is not so.

1868.—Further experiments were made respecting the efficiency of L'Extincteur, of which the *City Press* gave the following details:—"There was a large attendance of gentlemen, representing many of the largest houses of business in the metropolis. The speed and efficacy with which the comparatively tiny jet of liquid wiped out, as it were, the immense body of flame from an ignited sheet of pitch, appeared to astonish all. Presently a huge pile of tar barrels, strewn with shavings soaked with naphtha, was set on fire, and the fierceness and rapidity with which these combustibles burned may be imagined. When the fire was at its height, and every portion of the framework thoroughly ignited, the experimenter turned on his magic jet, and in less than three minutes there was scarcely a spark left. These experiments, slightly varied, were continued during the afternoon, and seemed to excite the wonder of all present."

1870.—About this date was invented the "Babcock Fire Annihilator, or Self-Acting Engine," based apparently upon the same principle as Phillips's, L'Extincteur, etc., but constructed of such dimensions that horses are used to drag them to fires. The liquid in these machines contains large quantities of alkaline carbonates, to which sulphuric acid is added to put the machine in operation; thus liberating carbonic acid gas, so as to give the pressure with which the solution is forced through the hose. These fire-extinguishing substances are thus brought to bear at once—water, a gas that does not support combustion, and an alkaline material which, it is claimed, coats or saturates combustible matter, so that extinguished flames will not relight. Each of these substances has been tried separately with unsatisfactory results, but their combination seems promising. Their chief excellence, it is asserted, is in accomplishing the extinction of fire with a smaller quantity of water and less consequent damage than is otherwise possible. The pipe and hose are of small diameter. These machines form an essential part of the extinguishing apparatus of the present Chicago Fire Brigade.

They are said to have been improved upon by Gardner, and subsequently by Beasley.

1871.—There was projected the "Fire and Water Co. Lim.," one of the objects of which was to introduce a new method of extinguishing fires, by means of a pump to be called the "Eclipse," which was to apply carbonic acid gas in "a thoroughly practical and scientific manner." The promoters of this Co., it was said, proceeded upon the principle that the "present theory of fire extinction is (1) wrong in principle, and (2) unsatisfactory in practice." The details of the invention were given as follows:—The pump made use of surmounts a tank containing 62½ gallons of water. Outside the tank is a little stove, in which a mixture of animal, vegetable, and mineral charcoal is set alight. The proportions of each variety of carbon is one of the secrets of the Co.; it being always understood that in these cases the proportions mentioned in the specifications are misleading, because the saving words are added, "or such other proportions as from time to time may be deemed desirable," or words to that effect. The combustion of this mixture generates almost instantly, in quantities practically inexhaustible, and at a cost purely nominal, carbonic acid gas mixed with a certain proportion of nitrogen. These gases are of peculiar density, and a simple process saturates the water with ten times its volume of them. In the experimental pump which we have seen, the whole of the mechanism is placed above the tank, so that the operation of the process may be easily examined. The water thus impregnated or saturated with the gases we have mentioned is poured upon the blazing pile by means of the pump, hose, and nozzle in the ordinary way. The gases settle down upon the burning faggots, and extinction is instantaneous. The effect is simply magical; and if results such as we have seen can be produced by a small pump and a 1-inch hose, we can hardly imagine what one of Capt. Shaw's steamers would effect, if adapted to this process.

But we now come to a description of the experiments:—Piles of dry wood and faggots were arranged in a field at Welwyn, Herts, where the inventor had been staying, and they were well besprinkled with tar. Here and there a lump of asphalte was inserted, and by means of a few sacks of shavings the fire was made general and rapid. Lurid flames shot up high into the air, pouring forth dense volumes of smoke, and with especial vividness where the presence of the asphalte was indicated by the extra density and vivid variegated colours of the smoke. At a given signal the water saturated with the gases we have mentioned was poured (or rather sprinkled in a fine mist) upon the blazing pile, and the effect was truly wonderful. Extinction was instantaneous. We have ourselves extinguished a considerable fire of this sort to the perfect satisfaction of the bystanders and of ourselves, yet not moving with anything like the rapidity of one of Capt. Shaw's trained hands, with so little water, that when the tank came to be replenished, a couple of pailsful more than replaced the quantity we had used. On Saturday the effects were such as to satisfy everybody. The fire was put down—not quite out—over and over again. Then fresh shavings, tar, and asphalte were called into requisition, and the fire allowed to draw up, to be again subdued. At length, as evening drew on, the parties allowed the fire to get thoroughly alight, and then they left off the mere experimental trifling amusement, sprinkled with vehemence at pressure of 150 lbs. to the square inch, and in three or four minutes the flames of 25 or 30 ft. had disappeared, the variegated hues of the smoke from the burning asphalte were no longer visible, the dense volumes rolling forth from the tar-besprinkled faggots cleared off, and not a spark was left. The crowd gave a hearty cheer or two, and the parties adjourned. The descriptive portion of this account we have drawn from the *Ins. Guardian.*

During this year also the *Metropolitan Fire Extinguishing Co.* was chartered in the U. S. Its scheme involves the use of carbonic acid gas, but under circumstances very different from anything previously attempted. We are told: "The Co. are about to erect extensive works for the manufacture of carbonic acid gas, which is much more easily and economically produced than the gas for illuminating purposes. The gas will be stored in large reservoirs, and will be distributed through the city by pipes beneath the side-walks, and will be made available to every building of every street or avenue as readily as illuminating gas or water, so that upon any alarm of fire, to turn a tap will be to extinguish the flames." We have not heard of the project going forward.

1872.—A patent was taken out in the U. S. for a "Fire Extinguishing Paint." When closely approached by fire, it is said to give forth immense volumes of carbonic acid gas, which operates to check the flames, and so retard the progress of the conflagration.

During this same year Signor Don Ramon Bañolas, of Arnan, Spain, made considerable improvements in a Fire Annihilator. His machines have been adopted by the Spanish Navy.

1873.—The great fire in Boston, U.S., in 1872, set many ingenious minds to work in devising remedies against fires in general. The Boston *Journal of Chemistry* (Jan. 1873), in discussing various considerations so suggested, offered the following plan for the evolution, on every one's premises, of carbonic acid gas for aerating water for immediate application:—Place in the basement of every warehouse or store an iron vessel resembling a steam boiler, the capacity to depend on the size of the building. This is to be kept two-thirds full of water, the chamber above the water to hold two glass vessels, one of which is filled with acid, the other with bi-carbonate of soda. The glass vessels broken when a fire takes place, these substances instantly develope carbonic acid, which, being absorbed by the water, changes into aerated or carbonic acid water. This water, led by pipes and impelled by the pressure of the gas, is ten times as effective in subduing flames as ordinary water; it may be always on hand, so as to be applied at the earliest moment, and there is no question as to its efficacy.

Mr. L. H. Bradford, engraver, Boston, suggested the following method of applying carbonic acid gas for the extinguishment of fire. His apparatus is self-acting, and immediate in its action. Pipes are extended through a building connecting with a large tank placed in the attic, filled with carbonic acid, so in case of fire occurring in any room the increased heat from the fire will melt the connexions of the pipe, causing an immediate flow of the annihilator, thus extinguishing the fire. A small wire is also connected with a gong, which sounds an alarm at once. This plan will, it is claimed, at a small expense, insure the safety of the building, and do much toward the prevention of large fires.

Mr. C. F. Eckhard of New York invented a "Self-acting Fire Extinguisher," composed of a solid composition in boxes, easily carried about, and when a fire occurs a box to be thrown into the flames. The composition burns without exploding, developing a dense smoke, which smothers the fire. It was claimed for them that even in partly opened halls or rooms they would keep the fire in check for hours; and that flames coming from other parts of the building could not remain. It was further said that if kept continually in rooms they would extinguish the fire before it could estab. itself. They were equally efficacious in the case of burning oil, spirits, etc. On board ships they were said to be invaluable. The vapour would illuminate rooms filled with the most dense smoke, and they would not damage either the texture or colour of furniture, etc., nor leave any unpleasant smell. They would not lose strength by age. They would extinguish fires in chimneys and flues. We have been hoping to hear more of this invention.

A contributor to the *New York World* suggested the following simple and ingenious method of having a F. annihilator in every house, always ready for use:—"In the basement have suspended a vessel full of sulphuric acid, to be upset by the turning of a crank in a box outside, of which the key is with the police and firemen. The vessel is hung in another one of carbonate of soda, from which tubes ascend and branch through the building, emptying on each floor. By turning on the crank, the extinguishing gas is generated, and soon fills every room, putting out the fire, and not damaging the goods.

Mr. Thomas Atkins, C.E., England, invented a machine by which the water thrown was impregnated with a gaseous compound, consisting of 18½ parts of carbonic acid, 1½ carbonic oxide, and 80 of nitrogen, manufactured from charcoal. "which possesses the important advantage of very slowly effervescing, although introduced at a high pressure." Its cost did not exceed 1*s.* for 1700 square feet. The working standard was 150 lbs. to the inch; but the compound could be stored at 1000. Experiments were tried at Ladywell with complete success. It is claimed for this invention that it effects the complete destruction of the asphyxiating qualities of smoke, which by this means is rendered capable of being breathed without inconvenience.

1874.—American ingenuity had got fairly to work in this matter of Fire Annihilators, as will be seen from the following record, and should lead to practical results: A trial of the "Steiner" chemical fire engine was had at Cincinnati early in the year, in the presence of the fire commissioners and committees of the board of aldermen and common councils. The machine was of 200 gals. capacity, and threw a constant, well-sustained, perpendicular stream through a three-eighths nozzle a distance of 80 ft. for one hour and a half. The machine carries twelve charges of carbonic acid gas—enough to run it nearly two hours, and it is capable of indefinite operation by simply pouring in the prepared chemicals. It does not charge itself while running, nor is any readjustment required in replenishing it at the scene of action. These points were satisfactorily demonstrated during the exhibition, which was also witnessed by an immense crowd of people.

A public test of an apparatus called the New York Protective Fire Extinguisher was to have taken place at Fall River, Mass., early in the year, a brick building costing 6000 dols. having been put up expressly for the purpose. In deference to the wishes of a number of officers of insurance and manufacturing companies desiring to be present, the affair has been postponed until spring. We have heard no more of it.

The Cleveland *Herald* thus speaks of a new fire extinguisher:—"While upon the subject of fire extinguishers, we would call the attention of all interested to the extinguisher of Mr. Dunning, late of New Orleans, La., who exhibited a simple cast-iron shell that is capable of containing about 150 or 200 cubic feet of gas, condensed to a liquid form, which can readily be thrown absolutely into the midst of the flames; when the same being released, it is claimed, it will extinguish the fire by depriving the same of its natural food—to wit, oxygen. We confess that we are inclined to accord to Mr. Dunning's invention great merit, and we are informed that those of our insurance agents who have examined it give it their unqualified approval."

Dr. Field, of Wilmington, Delaware, U.S., brought into public notice a plan concerning which very few details are afforded. His circular says, tersely enough: "No carbonic acid gas used; not quarter the expense; and no deleterious chemicals used; very effective in extinguishing fires."

Dr. Schuppert, of New Orleans, proposed the following ingenious and apparently practical method of extinguishing fires on shipboard. At given points in the hold are located boxes containing marble dust and carbonate of lime. From the deck a lead pipe communicates with these boxes. When a fire is discovered in the hold, diluted sulphuric acid is poured into the pipes, and coming in contact with the lime and marble dust, creates a large volume of carbonic acid gas, which is fatal to fire. As this gas is heavier than air, it would remain in the hold and effectually smother the flames.

It is in connexion with fires in ships that some of these inventions should find a ready application. No ship should now sail without some such appliance. We know that some of the large owners have already properly equipped their vessels in this respect.

Towards the close of the year we read of an invention in the course of being tested, the chief object of which was described to be to destroy fire by means of an instrument, which will fill speedily the hold or compartment of a ship in which fire has arisen with carbonic acid gas in *a dry state*, so as to extinguish the fire without the smallest injury to the cargo. The trials had exhibited satisfactory results, and as the machinery by which the gas is generated and distributed is simple and comparatively inexpensive, as it is moveable and occupies but a small space, recommendations of immense importance on board ship, its value, if its efficiency be fully and clearly demonstrated, can hardly be over-estimated. It is stated that the machine, which is called the "Pyroletor," is capable, when not required to extinguish fires, of being employed as a subsidiary force pump for washing decks, pumping the hold dry, etc.; thus, whilst in daily use for those purposes, being maintained in readiness and proper working order for the purposes for which it is more immediately intended. [FIRES ON BOARD SHIPS.]

1875. Jan.—Experiments made regarding certain improvements in "Dick's Patent Fire Exterminator," already described under date 1867. The improvements consist in keeping the chemicals separate until required, when a slight blow drives down the metal pin, breaks the bottle in which the acid is kept, and the process of the formation of the carbonic acid gas at once begins. Under the old system the pressure was always on, unless some means of leakage had arisen, and then the machine was valueless.

The proprietors of this machine state that in a period of four years it has, by its own unaided power, extinguished over 1320 fires, many of them threatening to be very serious indeed. There is a pub. list of fires extinguished by its means, being specific reports returned during the month of November, 1869, and we summarize the list thus:—110 factories, warehouses, etc., had outbreaks of fire on 317 occasions. On 309 of these occasions *L'Extincteur* was quite successful, saving property to the valued amount of £1,310,100, at a loss of only £1691, or 2*s*. 6*d*. p.c. These statements should be officially investigated, and if found to be true, the fire offices and their agents have a protective power within reach of the greatest possible value. [FIRE EXTINGUISHMENT.]

M. Delpech, an engineer in Paris, has invented a new apparatus. He describes it as consisting of an ordinary fire engine, set in motion either by muscular or steam power, which is connected with a reservoir divided into two compartments. In one of these compartments is contained a thin solution of sulphuric acid, and in the other a solution of bi-carbonate of soda. The pumps of the engine are adjusted in such a way that when they are in operation every stroke of the piston drives a certain quantity of both these fluids into the hose. Use can be made of the steam ejected, as in the case of an ordinary fire engine. Carbonic acid is generated when the two liquids come in contact and combine upon the machine being put in motion. This carbonic acid is thrown upon the fire in a stream sent out from the pipe, and the atmospheric air which is indispensable for combustion is driven off from the flame. This is what gives the apparatus such extraordinary efficiency. The carbonic acid is not generated and disengaged until the two liquids come in contact and combine, and before it has an opportunity to escape it is thrown by the pumps upon the burning object. It then expands, expels the air, and at the same time extinguishes the fire. Further, the water which is thrown out by one of these engines has far greater extinguishing power than ordinary water. In addition to the carbonic acid gas developed by the combination of the sulphuric acid with the solution of the bi-carbonate of soda, a salt is also produced, called sulphate of soda, or glauber's salt. This salt remains in solution in the water, and is thrown with it upon the fire. It has great effect in extinguishing fire, because it covers the spot which is burning with a coating resembling glass, that renders combustion impossible. The extraordinary efficiency of the new fire engine, therefore, is said to consist in the combination of three substances, which are each of them powerful agents in the extinguishment of fire, namely: first, water; secondly, carbonic acid gas; and thirdly, sulphate of soda.

There are, indeed, practical difficulties in the way of the adoption of the process here indicated, and these arise mainly from the corrosive character of the solution of sulphuric acid. Any metal used must be coated with enamel to resist the chemical action of the acid. The hose must be made strong, and should be coated with India-rubber in the inside. The machine must be thoroughly cleansed with pure water every time it is used in order to remove all the acid from such pieces of metal as are unavoidably used in its construction.

The inventor having made application for a patent in France, M. Hébré, the head of the patent office and a member of the French Academy of Sciences, reported favourably upon it, and the patent was granted. Experiments have been made at Havre, at the instance of the marine ins. cos.; and the result, as contrasted with that from the ordinary fire engines, was most striking. We are not very sanguine of any permanent results from this invention, or rather adaptation.

July.—There was regis. the *Wallace-Tucker Fire Annihilating* Co. Lim., founded for the purpose of purchasing patent rights for "an improved method of and apparatus for protecting warehouses and other buildings and ships from fire; also applicable to the preservation of iron safes and similar receptacles and their contents;" and another patent for "an improved method of and means for preparing materials to be introduced into buildings and structures, to produce carbonic acid gas or other gas, to afford protection from fire in the same," etc.

The real use of F. Annihilators, in the sense generally understood, and in the sense in which we have considered them, is at the inception of a fire: when it has once obtained headway, other processes are brought into operation. The first will be the use of hydrants, where they exist; but the ordinary methods are by the use of F. engines, manual or steam. When conflagrations have attained large proportions, these again become inoperative, and other measures have to be resorted to. The most important of these is the destruction of buildings by explosives. [FIRE EXTINGUISHMENT.] [FIRES ON BOARD SHIP.]

FIRE ARMS.—This term comprises all sorts of guns, rifles, fowling-pieces, blunderbusses, pistols, revolvers, etc. In consequence of the frequent occurrence of accidents from the bursting of improperly constructed barrels, the Legislature interfered, first in 1813, by 53 Geo. III. c. 115; and afterwards by 55 Geo. III. c. 59 (1815), which imposes a fine of £20 on any one using, in any of the progressive stages of its manufacture, any barrel not duly proved; on any one delivering the same except through a proof-house; and on any one receiving, for the purpose of making guns, etc., any barrels which have not passed through a proof-house. The principal proof-house existing at the present time is situated in Birmingham. The workmen employed there are specially insured against the risk of accident.

FIRE Balls for Destroying Ships and Buildings.—These were much employed in early warfare for incendiary purposes, but have now fallen out of use. Much learning has been expended in tracing the compositions employed in their manufacture, as the reader of *N. and Q.* will be aware. [See 2nd ser. vol. iii. especially.] Bombshells and war-rockets supply their place with more destructive effect. [Greek Fire.]

Fire Balls, in Meteorology, signify luminous bodies which suddenly appear in the sky, usually at a great height above the earth. They shoot through the heavens with immense velocity, and are sometimes accompanied with the fall of an aerolite. Scientifically these are designated *meteors*. Fires are sometimes reported as resulting.

FIRE Bells.—Bells placed in town halls, market halls, and other public buildings, as also sometimes in private houses, more especially in the country, in view of giving early alarm to the neighbourhood in case of fire. In many cases these same bells were used to sound the "Curfew," and prob. the idea originated in this early institution. [Curfew Bell.]

There is in the Abbey Church at Sherborne, in Dorsetshire, a Fire Bell, confined exclusively to giving the alarm in case of a fire breaking out in that town. The motto round the rim or carrel runs thus:—"J. W. I. C. 1652.

"Lord, quench this furious flame;
Arise, run, help, put out the same."

As lately as Nov. 1859, a Curfew Bell was regularly rung at West Ham, in Essex.

FIRE Briefs [King's Briefs].—In early times, before the origin of Fire Ins., on the occurrence of any great fire (or, indeed, any other serious calamity) in any particular locality, it was the custom to invoke the aid of charitably disposed people by the issue of Briefs, King's Briefs, Letters Patent, Fire Briefs, or King's Letters, as they were variously called, and which set out in more or less detail the circumstances attending the calamity, and were ordered to be read in churches and otherwise, as will appear in the progress of this art.

These Briefs were usually issued by the Lord Chancellor, under the authority of the King in Council, to those who furnished proof of loss, accompanied by recommendation from some nobleman or other person attached to the Court of the Sovereign. We shall select a few instances which will show the working of the plan.

1653.—On the occurrence of the great fire of Marlborough in 1653, the following "Brief" was approved by the Council of State sitting at Whitehall, and ordered to be promulgated. This, as will be seen by the date, was issued in the first year of the Protectorate of Cromwell, who himself contributed £2000 towards the object to which it relates. The language is characteristic of the period:

Whereas the Council hath been informed, as well by petition of the mayor and inhabitants of Marlborough, in the county of Wilts, as by certificate under the hands of several justices of the peace of the said county, that upon Thursday, the 28 April, 1653, the Lord, whose judgments are unsearchable and His ways past finding out, in His overruling providence disposing, a fearful and most violent fire broke out almost at the lower end of the said town, which in the space of 3 or 4 hours burnt and destroyed all the considerable parts and body thereof, with one of the churches and the market house, to the number of 224 houses, the value whereof and goods consumed is estimated at threescore and ten pounds at the least, to the utter undoing of the greater part of the said inhabitants, they not having anything for their future livelihood, and withal to supply the urgent necessities of their languishing families. The sense of this weighing deeply and seriously on the hearts of the Council, with tenderest bowels commiserating the much to be lamented condition of the said distressed inhabitants, they have thought themselves bound both in conscience and duty, as suffering and sympathizing with them in their great affliction, to recommend the same to the charity and benevolence of well-disposed persons, and upon this extraordinary occasion to appoint, as they do hereby, a collection to be made in the Cities of London and Westminster, and in all other cities, counties, boroughs, towns corp., and other principal places within England and Wales, as well within the liberties as without, and within the town of Berwick-upon-Tweed, for the relief of the said inhabitants and for re-edifying of the said town, which is exceedingly necessary and of great importance for commerce and trade; not doubting but that a business of this nature (so Christian and of such concernment to so many ruined and desolate families) will find ready acceptance with all those who have anything of bowels of compassion in them; and that they will be easily provoked to such a cheerful and liberal contribution as shall be answerable to so great a loss. And it is hereby recommended to the Lord Mayor, Aldermen, and Common Council of the City of Lond. that order may be given for a collection to be made throughout the said City and liberties thereof in such manner as may be most effectual for the promoting of this work, and testify an affectionate resentment of the miseries of those who are in a perishing condition. And it is also recommended to the sheriff and justices of the peace of each county of E. and W., to justices of the peace for the City of Westminster, and to mayors, bailiffs, chief governors, and officers of all cities, boroughs, towns corp., and other privileged places, to take care that these presents be dispersed through their respective jurisdictions whatsoever, as well within liberties as without; and to give their best assistance that this collection be made therein in such manner as may most tend to the promoting and advancement of this work. And whereas for the better managing this work in all parts of the nation for the best advantage of the said town and distressed inhabitants thereof, and that the contributions which may be raised shall be rightly disposed of and impartially distributed amongst those who have been great sufferers in this calamity, the Council have appointed Alderman Andrews, Alderman Tichbourn, Alderman Ireton [and 27 others all named], to be a Committee to sit at Sadler's Hall, in the said City of Lond., to take particular care for the carrying on of this bus.: wherefore the persons to whom it is recommended by these presents to take care of this collection in their several jurisdictions are from time to time to correspond with the said Committee, and to manage that bus. in such manner as the said Committee shall on all occasions advise and signify unto them.

18 May, 1653. Ordered by the Council of State that these presents be printed and pub.

We may see the more precise working of the plan by reference to the operations of the Committee appointed under the said "Brief," here called "Orders of the Council of State":

31 May, 1653.—By the Committee appointed for managing and ordering the collections for Marlborough, sitting at Sadler's Hall, Lond., *Ordered*,—That a sufficient number of Orders of the Council of State be sent to the high sheriff of every county in E. and W.; and that the high sheriff in every county, upon the receipt of the aforesaid orders, shall forthwith send or cause to be sent a convenient number of them unto the chief constables of each hundred, wapentake, or division within the counties, according to the parishes or chapels in their particular hundred or division. And the said constables are desired and hereby required to send one of the said Orders to the minister or churchwarden of each parish or chapel within their said hundred; and the ministers in their respective parishes are hereby desired and appointed upon the next Lord's Day after they have received the same, to give notice of the sad and distressed condition of the inhabitants of the town of Marlborough, with the greatness of their loss, the better to prepare them for a collection to be made on the Lord's Day following; at which time, the congregation being assembled together, the ministers are hereby further desired and appointed to pub. the Order from the Council, exhorting and stirring up to a liberal contribution towards this charitable work. And the churchwardens of the several parishes in the country, with two other honest active men nominated by the minister and themselves, are hereby desired to gather the benevolence of well-disposed persons, or to take the subs. of the several inhabitants in the place where they are met together, and in the week following to go from house to house collecting it; or to manage it in such other way and manner as according to their discretion may be judged most effectually conducible to the promoting of so considerable a work. And in case it so fall out that any parish, being destitute of a minister, shall be without public assemblies, then the constables and churchwardens of the said parish are to go from house to house to gather and receive the charity of the inhabitants.

There are many other directions regarding the mode of procedure, as that the amount collected should be regis. in the books of the respective parishes, "and also set down in words at length on the back side of the said Order, and subscribed with their names, and returned together with the Order." The moneys to be paid to the receiver-general of the several counties. These latter to "make return of the said sums of money, together with the Orders, unto Mr. John Strange and Mr. Robert Barret, at the 'Rose and Pomegranate' in Friday St., in Lond., who are appointed treasurers, and authorized for the receiving and paying forth the same, according to the orders and directions of the Committee." "It is also further ordered that the money which shall be collected in the City of Lond. and Westminster, the borough of Southwark, the late lines of communication, and the weekly Bills of Mort. be brought in by the persons appointed for the collecting it unto the treasurers aforesaid, whose receipt under their hands or either of them shall be a discharge of such collectors."

1684.—At the Court at Whitehall, 11th Feb., present the King's most excellent Majesty: A humble petition of His Majesty's subjects within the kingdom of England and dominion of Wales, who have been sufferers by fire and otherwise, being this day read at the Board, praying that His Majesty would be graciously pleased in his princely wisdom to direct some expedient whereby they may receive the benefit of the several letters patent granted to them by his late Majesty King Charles II. of ever blessed memory, for the collection of *the charitable benevolence of well-disposed people towards the reparation of their losses*, His Majesty, out of his tender commiseration for the petitioners' condition, was pleased to order that all briefs granted by his said late Majesty for losses by fire, or otherwise, and not yet expired, or the collections made thereupon not completed, be read in the several parish churches where the same hath not been already pub., and the collections proceeded in, according to the tenour of the several letters patent in that behalf. And of this His Majesty's pleasure all parsons, vicars, curates, churchwardens, overseers of the poor, and all others His Majesty's officers and ministers whom it may concern, are to take notice and govern themselves accordingly.

That these Briefs afforded great opportunity for fraud is clear, and a notable instance in point was brought before the House of Commons in 1701, of which the following are the details:

The case of Margaret Mortimer, widow, and 17 more sufferers by a dreadful fire which happened at Derby Court, Westminster, the 16th April, 1697, humbly submitted to the Hon. the House of Commons. No sooner was the fire over but one Mr. Pemberton (in whose empty house the fire began) was sued, by one Mr. Davis, at law for a house and goods the said Davis had burnt down, and the Court awarded that Pemberton should pay Davis £350. The next Sunday following Pemberton came to the sufferers and made his proposal, "That if we would sign a release to him that we would not sue him for our losses, he would lay down the money to procure the King's letters patent to collect the charity of well-disposed persons throughout England for our relief." He told me he had skill in the bus., and that he knew some men in the country that had got good estates by gathering charity, and that it would be a constant spring to us. These insinuations prevailed with us to sign his release, which we all did. A meeting was appointed to consult what was to be done; and according to his direction a petition was drawn up to the Bench of Justices at the Quarter Sessions held at Westminster, which (after we had proved our losses) was granted; and the major part of the Bench of Justices signed our certificate for £3035 loss, which certificate was thus expressed: "We whose names are hereunto subscribed do certifie, that on the 16th of April, 1697, there was a loss by fire in Derby Court, Westminster, amounting to £3035, as has been proved before us." This general certificate not naming the number of persons together with their respective sums they lost, there were 5 persons put into the patent for £1881 10*s*., and two of the real sufferers left out of the patent; 4 of the 5 persons are not yet known; the fifth was Pemberton himself for £400 loss, *though his houses were insured to their full value, if not much above the worth of them,* being insured, as I am informed, in two offices. Pemberton, after we had procured the Justices' certificate, lets the sufferers know nothing further of the matter, but names trustees, agrees with collectors, and takes their securities, which was a bond of £1000 for the security of £3035. When 8000 Briefs had been sent abroad, signed by four honest gentlemen, whose names he had presumed to put in, together with five more that knew nothing of any such patent; he having got four hands adds a fifth name himself, then giveth notice to the sufferers that the patent was out, and that if we pleased we might see it; and to excuse himself lays all the fault upon the Lord Chancellor, that his Lordship put in the trustees and collectors, and took their securities. Then did I take the names of all the trustees, and I went to them severally to know of them when they met together to choose collectors and take their securities. They told me they never met, for Pemberton brought the papers to them to sign; three of the trustees knew nothing of any such patent, and two refused to sign the papers, because they were not summoned to meet together, and four were prevailed with to sign some of the 8000 papers to send abroad into the country. Then did I leave written summons at each trustee's house to meet at the Christian Coffee House in King Street, Westminster; and I prevailed with Dr. Oldys to give them a meeting, and to lay before them the fraud committed by Pemberton, and the great trust reposed in them.

This meeting was the 5th of November, 1698. So I heard nothing further, and the date of the patent almost out, and not one penny paid to the sufferers. On the 3rd of May, 1699, I drew up a writing, that if the major part of the sufferers would join with me in an humble petition to my Lord Chancellor, I hoped his Lordship would grant us some relief. There were 13 persons, out of 18 real sufferers, that joined in the petition to my Lord Chancellor. At the first hearing his Lordship declared before the whole Court that there was never such an abuse put upon the Broad Seal, and committed Pemberton to the prison of the Fleet till he considered of further punishment for him; but Pemberton found out friends to appease the Lord Chancellor's wrath, and in a short time after his Lordship was dismissed the Seals, and the present Lord Keeper put in; to whom upon the 17th of April, 1701, we drew up an humble petition for a re-hearing of our whole cause; and in May following his Lordship made a very full order, thereby referring it to a Master of Chancery to inspect and report all the particulars relating to the said matter: and the said Master having made his report, by which it doth appear that Thomas Lewis, William Ranshaw, and Thomas Chamberlain, all living in Stafford town, who have been common collectors for such purposes for above twenty years, have been guilty of counterfeiting Briefs, and other great frauds; it appears that there are fewer Briefs by 1500 sent up than by the trustees' accounts they had sent them, including and accounting the counterfeit Briefs, and others printed at Exeter, and the many indorsements on some Briefs all in one handwriting, and above a thousand places according to the account of parishes in England besides London and Middlesex, after all their bringing in, of which they have given no account whither anything collected or not. There were 114 Briefs returned from Cumberland and Westmorland, as many as there are parishes in those counties, returned two years and an half after that by the Briefs themselves it appears they were read. The sufferers received not one penny before the patent had been out a quarter of a year, and then on complaint to the Lord Chancellor there was £120 paid in to the trustees.

Now by the Master's report it appears amongst other things thus, viz.: "It has been admitted before me, that there are more Briefs yet standing out and not returned; but in what counties or places the Briefs returned by them were laid, has not been made out to me by the said collectors; nor can possibly be gathered by the Briefs brought before me, which lie in small parcels containing Briefs returned from different counties with a very great number of indorsements in the place of Briefs which should have been returned, and by which indorsements the aforesaid number of Briefs are made up. I further certifie that it has been objected before me by the said Mrs. Mortimer that besides the not returning the Briefs in time according to the said collectors' bonds, there appears to be two other impressions of Briefs amongst the Briefs returned besides those delivered out by the trustees, and which were printed by Mr. Jones in the Savoy; some of which were printed at Exeter, and are so mentioned to be at the bottom of them; and others are with an impression imitating those printed by Mr. Jones in the Savoy, with his arms and name thereto, which were not printed by the said Mr. Jones, but by some other person; and that the major part of those last-mentioned Briefs are amongst those which have been returned since the before-mentioned matters were referred to me; and that there are many

Briefs returned with the indorsements written all with one hand; and that some have many indorsements written on one Brief, relating to divers parishes, all of one handwriting; and that above 700 Briefs have been returned without any money collected on them, and many of them having no more besides the parish than the words Nothing Collected indorsed on them; and that there are a few small narrow scripts of paper instead of Briefs, signifying that nothing is collected in parishes named therein without the hand of the minister or churchwardens to warrant them. As to which matters so objected, the sollicitor for the country collectors took a copy, but making great delay in returning an answer, I inspected the said Briefs with regard to the said objections, being about to make a report *ex parte* against the said collectors, and found that there were about 100 Briefs, imitating the said impression of Mr. Jones, and to two of them Mr. Jones's servants have made affidavits before me that the same were not of the said Mr. Jones's impression; and that about 100 Briefs were printed at Exeter; and that the other objections appear to be true."

This case being only the heads of the matter of fact, and it being an utter ruine to many of us, three persons being little better than starved to death already, and others in a starving condition still, I thought it my duty to lay our grievances before your Honours as the patriots of your countries and the helpers of the distressed; which I attempted to have done the last Session, but it was then too late to bring in a Bill for the regulation of this matter.

This document bore the following indorsement:—"The case of Mrs. Mortimer and the rest of the sufferers by Derby Court fire; humbly submitted to the consideration of the Honourable House of Commons." No immediate result followed upon the narration of these abuses.

1704.—A further statement was issued, purporting to be made by Margaret Mortimer, widow, and great pains were taken to bring the matter before the King and Parliament, as we shall see, with better success. We give one or two passages from the document:

> Whereas the common way of collecting charity upon letters patents hath been by undertaking collectors, which hath been sufficiently prov'd to be the utter ruin of all charity; 'tis humbly propos'd that a publick office be erected in London, and that the Lord Mayor and Court of Aldermen be constituted Commissioners for all patents, they being gentlemen not only of great integrity and honour, but of great understanding, for improving a stock when rais'd.
>
> When such an office is set up, all persons having losses by fire may repair to it for instructions, where records shall be kept of all concerns relating to that office. The first instruction given by the office is to send the sufferers to the Bench of Justices to have their losses certify'd; and that all persons' names, together with the respective sums they lost, be also certify'd, and the number of persons in each patent. When the certificate is obtained, it shall be brought back to the office; and the officer set apart for the purpose shall repair to the Clerk of the Briefs belonging to the Lord Keeper, or Lord Chancellor, or Commissioners of the Broad Seal, for the letters patents. Then the Queen's printer is to have notice to send as many copies of the patents back to the office, as the proper officer shall bespeak.
>
> 'Tis likewise humbly propos'd, That all collections upon letters patents from henceforth be gather'd by the Bishop's visitations, and that the allowances for collecting shall be out of the copies of the patent brought in; for instance, if twopence be allowed to the deputed trustee for his care in returning the mony to the office, a penny to the apparitor for laying the copies down, twopence to the archdeacon for taking the copies up, and twopence to the register for keeping exact accounts of the number of papers brought in, and what mony is indors'd; which accounts shall be forthwith given into the office where books shall be kept for that purpose. This is but sevenpence each paper, and these men have had thirteenpence each paper for their salary besides robbing the sufferers of most of the mony collected; not to exceed what they have had, there is sixpence each paper towards an office. By this computation these men have had five hundred pounds for collecting every patent (the country part only) without any reckoning of the Briefs from Dissenters' meetings. When the schedules of all sorts of meetings in each diocess are kept upon record in the office, I hope there can be no room for hiding anything; so that if the letters patents are issued out for a public collection of charity for the raising of a Stock, the office may cause twenty thousand copies of the patent to be brought from the Queen's printer, and lodg'd in the office, where the officers of each diocess shall repair for such number as they know there are churches and chappels of the Church of England.

1705.—There was enacted the 4 Anne, c. 14—*An Act for the better collecting charity money on briefs by letters patent, and preventing abuses in relation to such charities*. The particular provisions of this Act we have already set forth in our art. BRIEFS, to which the reader should refer.

It is not a little remarkable that such a mode of procedure should have been deemed worthy of preservation at all after Fire Ins. had come into practice, and had been in operation sufficiently long to be understood. The Act indeed was necessary to remove the abuses, but the wonder is that it did not make a clean sweep of the whole proceeding. Instead of that, at about this date a proposal was set on foot for raising a permanent fund out of which fire losses should be paid without waiting the return of the Briefs, the fund for this purpose to be provided from collections made during the visitations of the Bishops. This we believe was not carried out.

Various specimens of these printed Briefs exist among the records of the Corp. of Lond., viz:—

1700, 28 May. Briefs for collections for relief of sufferers by fire in Bermondsey.

1700, 8 June. Briefs for collections in aid of the distress caused by fire at Beccles, Suffolk.

1705, 19 Dec. Briefs for collections in aid of the sufferers by the fire at Inniskilling (*sic*).

The moneys collected under these appear to have been paid into the Chamber of Lond. to be disbursed under the authority of the commissioners appointed for the purpose.

FIRE BRIGADES.—Bodies of trained or experienced men whose especial business it is to extinguish fires. We do not confine ourselves to such trained bodies in the following art., or it would indeed be brief; for it is only in recent times that Gt. Brit. at least has had the advantage of really trained bodies of men answering strictly to the definition of F. Brigades. But, on the other hand, bodies of men who have had to perform the duties of F. Brigades have existed, certainly in the metropolis, if nowhere else, for several centuries. These, so far as records exist, we shall speak of.

To ancient Rome we look here, as in many other instances, for the beginning; and we do not look in vain. The Emperor Augustus, who wore the imperial purple at the time of the birth of our Saviour, organized 12 cohorts of watchmen—who were also firemen—each of 700 men. These were stationed in palaces. The remains of the station of the 7th cohort of firemen were discovered only a few years since (1866 or 1867), the walls decorated with tritons, nymphs, and fishes, in mosaic. The famous aqueducts of the city were prob. designed in part with the view of extinguishing fires.

Suetonius says that the ancient Romans maintained bands of trained firemen, called *matricularii*, whose duty it was to extinguish fires, and that there were firemen in all the provincial towns. Petronius mentions their cutting away with axes, and throwing water from buckets at fires. Under FIRE ENGINES we shall see that they were not without appliances answering, although perhaps somewhat feebly, to that name.

1189.—The wardmotes of the City of Lond. arranged a series of rules for preventing loss of life and destruction of property by fire, among which were the following:—1. That all persons who dwell in great houses within the ward have a ladder or two ready and prepared to succour their neighbours in case misadventure should occur by fire. 2. That ten reputable men of the ward, with ten aldermen, provide a strong crook of iron with a wooden handle, together with two chains and two strong cords, and that the beadle have a "good horn, and loudly sounding." Here certainly was the inception of a Fire Brigade.

1558.—Reign of Mary. An incipient brigade was estab. at Exeter: leathern buckets, ladders, and crooks were ordered to be provided.

1583.—Reign of Elizabeth. Fleetwood, Recorder of Lond., in his famous speech regarding the power of the sovereign to prevent the growth of the City, said (*inter alia*): "In Lond. houses are to be pulled down with engines, hooks, and ladders provided for that purpose, . . . and this is for avoiding of the rage of fire," etc., etc.

1633.—At a "Wardmote Inquest" at this date, under head of "Fire," it was ordered: "Also that you shall have speciall regard that from time to time there be convenient proviso for hooks, ladders, and buckets, in meet places within the several parishes of your ward, for avoiding the peril of fire."

1667.—Charles II. estab. by proclamation a code of "Laws and Rules to be observed within his Majesties Palace at Whitehal, in case of Fire happening there, and for preventing of damage thereby." These regulations did not amount to the formation of a brigade, but they made some advance in that direction. They will be given in detail under FIRE PREVENTION.

Same year, the Common Council of Lond. passed "An Act for preventing and suppressing of fires within the City and Liberties thereof," which provided (*inter alia*) that the City should be divided into four districts, and each of these was to be provided with 800 leather buckets, 50 ladders of different sizes from 12 to 42 feet in length, 2 brazen hand-squirts to each parish, 24 pickaxe sledges, and 40 shod shovels.

That each of the 12 companies provide themselves with an engine, 30 buckets, 3 ladders, 6 pickaxe sledges, and 2 hand-squirts, to be ready on all occasions. And the inferior companies such a number of small engines and buckets as should be allotted them by the Lord Mayor and Court of Aldermen.

That the Aldermen passed the office of Shrievalty do provide their several houses with 24 buckets and one hand-squirt each; and those who have not served that office, 12 buckets and one hand-squirt each.

And for the effectual supplying the engines and squirts with water, pumps were to be placed in all the wells, and fireplugs in the several mainpipes belonging to the New River and Thames waterworks. [We shall give a full abstract of this measure under FIRE PROTECTION.]

1670.—In *Marlborough*, Wilts, then relatively an important town, which had several times suffered by fire, an "antient provision" was reinforced, which entailed upon the several wards the duty of preserving the wells, and the "necessary concomitants of tumbrils, buckets, ropes, chains, ward-ladders, and firecocks."

In *Paris* an ordin. of M. de la Reynie, Lieut. of Police of this year, required all master masons, carpenters, and tilers of the capital to report their place of abode to the commissioners of the police of their quarters, under a penalty of 300 livres and the loss of their freedom. (See 1722.)

1680.—During this year the founder of the *Phœnix* Fire (No. 1) estab. a F. Brigade to look after its interests in the way of extinguishing fires. We shall speak of it more in detail under F. EXTINGUISHMENT.

Towards the close of the 17th century, a scheme was laid before Parl. by a Mr. Alexander Cutting, which aimed at the estab. of an extended Fire Brigade for the protection of houses and property against fire and theft on occasion of fire, to be maintained by a rate levied upon all houses; and hence to abolish the necessity for Fire Ins. We shall give an outline of the proposal in our hist. of Fire Ins. [FIRE INS., HIST. OF.]

1707.—The Act 6 Anne, c. 58—*An Act for the better preventing of mischiefs that may happen by fire*—makes a very distinct reference to the Brigade as then existing in Loud.:

> II. And whereas the several ins. offices for insuring houses against loss by fire retain in their several services, and give coats and badges unto watermen for service, and assistance in extinguishing of fires, who are always ready at a call, and are provided with various sorts of poles, hooks, hatchets, and several other instruments and things at the charge of the said respective ins. offices for the extinguishing of fires; *which watermen* [firemen ?] *by custom and skill venture much further, and give greater help than any other persons not used to come into danger:* And whereas it hath been found by frequent experience that such watermen are of great use and service whenever any fire happens.

They were therefore exempted (not exceeding 30 for each office) from being impressed, or liable to be compelled to go to sea, or to serve as marines, or as soldiers at land, "their names and places of abode being regis. and entered with the sec. or other officer of the Admiralty." This same Act provides for every parish within the Bills of Mort. keeping a large engine, and a hand engine, and a leather pipe (hose).

1708.—By the 7 Anne, c. 17, it was provided (sec. 2), that the rewards to keepers of engines first arriving at fires might be paid "to the keeper of any other large engine (though not a parish engine), who shall bring in such large engine to help to extinguish any fire, in good order and compleat." This evidently was intended to apply to the Brigades of the several fire ins. offices.

1722.—An actually organized F. Brigade was estab. in *Paris* this year, on the occasion of the Duke of Orleans presenting the city with 30 manual engines. A corps of 60 men was raised at the expense of the State, and placed under the command of the Lieut.-Gen. of the Police.

1763.—By 4 Geo. III. c. 14, the rewards which had been awarded to parish engines arriving earliest at fires under the Act of 1707 were extended to "other engines"; so that the brigade engines were thus encouraged to compete with the parish engines in prompt attendance at fires.

1772.—By 12 Geo. III. c. 73, the preceding laws were consolidated. No new features were introduced regarding brigades, except that in cases of chimney fires the occupiers of the houses or apartments to which the chimney belonged were to pay rewards to the firecocks and to the engine-keepers first arriving.

1774.—The provisions of the 14 Geo. III. c. 78, which guard against fire within the City of Lond. and the B. of Mort., etc., expressly provided that fire engines and fire ladders shall be kept in certain known places; fireplugs fixed on the mains; and marks placed to indicate where such plugs were to be found, with keys to open the same (s. 74); engines and ladders to be kept by every parish under penalty on the churchwardens for default (s. 75); turncocks to be rewarded for early supply of water at fires (s. 76); the expenses are to be paid out of the poor-rates (s. 81).

1791.—In Nov. of this year the *Royal Exchange*, the *Sun*, and the *Phœnix*, with the approbation of the authorities, estab. what was then called a *fire-watch* or fire-guard, and supported it at their own expense. This was the first *real* Fire Brigade estab. in Lond. Other offices soon after joined; and so the incipient brigade continued to gain strength. It is clear, however, from what follows, that while the several may have acted in a united manner among themselves, they still kept up the outward appearance of individual action.

1794.—In "proposals" issued by the *Sun* F. Office under date 1st Nov. this year, there was contained the following:

> And for the farther encouragement of persons insuring, there are provided several F. engines, and there are also employed in the service of the said office (within the B. of Mort.) a number of engineers and firemen, who patrole the streets in different divisions, all hours of the night, from the following Patrole Stations, which is a considerable addition to the public security. This office has also engines and firemen at other places, where, as well as at the stations of the night patroles, assistance may likewise be had at all hours.
>
> *Stations of the Fire Night-Patrole.*
>
> ENGINE HOUSE, Wood St., Cheapside.
> Engine House, Wild Court, Wild St., Lincoln's Inn Fields.
> Engine House, Swallow St., near Conduit St.
> Engine House, Wellclose Sq.
> Engine House, Morgan's Lane, Tooley St.
>
> *Other Stations.*
>
> SWAN INN, Holborn Bridge.
> Messrs. Gubbins & Cook, 82, Upper Thames St.
> Mrs. Bristow, Engine-maker, Ratcliffe Highway.
> Mr. Cleaver, carman, nr. John St., Horsleydown.
> Messrs. Gubbins and Cook's Yard, Cuper's Bridge, Lambeth.
>
> The firemen and porters are clothed in blue liveries, wearing silver badges, with the *Sun* mark.
>
> All cities and great towns may have assistance and encouragement for purchasing engines and proper machines for putting out fires, upon application to the said office, agreeable to the number of insurances made by this office in such respective cities or great towns.

1808.—Among the many good things which Sir Fred. Morton Eden [founder and afterwards Chairman of the *Globe* Ins. Co.] did or attempted to do for the ins. offices and the public, was that of trying to strengthen the then recently formed Fire Brigade in the metropolis, and reconstituting it on the model of the Corps de Sapeurs Pompiers of Paris. His proposal was that each of the Lond. fire offices should furnish 20 firemen, 10 of whom should be first class, and paid for all fires they attended, and 10 second class, to be paid only when especially called upon to render assistance; that all matters relating to appointments of firemen and the bus. connected with the proposed estab. should be managed by an engine committee; and that each office should pay an equal contribution towards the expense of the estab. After some trouble he abandoned the attempt as then hopeless. The only Co. prepared to join his was understood to be the *Atlas.* The other offices continued the asso. they had formed in 1792. (See 1825.)

1812.—There was pub. from the ingenious pens of the brothers James and Horace Smith, *Rejected Addresses, or the new Theatrum Poetarum,* which purported to be written in commemoration of the opening of Drury Lane Theatre in that year, after its destruction [2nd or 3rd time] in 1809. Its value to us is that it is understood to give a very correct account of the action of the F. Brigade (if it can be spoken of in the singular number) as it existed at this period:

The summon'd firemen woke at call,
And hied them to their stations all;
Starting from short and broken snooze,
Each sought his pond'rous hobnail'd shoes;
But first his worsted hozen plied,
Plush breeches next, in crimson dyed,
His nether bulk embraced;
Then jacket thick, of red or blue,
Whose massy shoulder gave to view
The badge of each respective crew,
In tin or copper traced.
The engines thund'red through the street,
Fire-hook, pipe, bucket, all complete;
And torches glared, and clattering feet
Along the pavement paced. . . .
The *Hand-in-Hand* the race begun,
Then came the *Phœnix* and the *Sun,*
The *Exchange,* where old insurers run,
The *Eagle,* where the new.

Various editors have endeavoured to show that historical accuracy was attained in the order in which the offices are named. This is not so. If *Phœnix* No. 1 were intended, it should have come before the *Hand-in-Hand;* if No. 2, it should have come after the *Sun* and the *Royal Exchange.* It is most prob. that they are placed simply in rhythmical order. The *Lond. Assu.* is omitted altogether, and yet we know that it had a very able body of firemen.

Under the arrangement of 1792 it is prob. that while the engine co. of each office had a foreman, there was one leader for the whole; and that this leader at this date was Higginbottom, who is made in the lines which follow to die a fireman's death, and we suspect the circumstances to be in the main authentic:

E'en Higginbottom now was posed,
For sadder sight was ne'er disclosed;
Without, within, in hideous show,
Devouring flames resistless glow,
And blazing rafters downward go,
And never halloo "Heads below!"
Nor notice give at all.
The firemen, terrified, are slow
To bid the pumping torrent flow,
For fear the roof should fall.
Back, Robins, back! Crump, stand aloof!
Whitford, keep near the walls!
Huggins, regard your own behoof,
For, lo! the blazing, rocking roof
Down, down in thunder falls!
An awful pause succeeds the stroke,
And o'er the ruins volumed smoke,
Rolling around its pitchy shroud,
Conceal'd them from the astonish'd crowd.
At length the mist awhile was clear'd,
When lo! amid the wreck uprear'd,
Gradual a moving head appear'd,
And *Eagle* firemen knew
'Twas Joseph Muggins—name revered!—
The foreman of their crew.
Loud shouted all in signs of woe,
"O Muggins! to the rescue, ho!"
And pour'd the hissing tide:
Meanwhile the Muggins fought amain,
And strove and struggled all in vain,
For, rallying but to fall again,
He totter'd, sank, and died!
Did none attempt, before he fell,
To succour one they loved so well?
Yes, Higginbottom did aspire
(His fireman's soul was all on fire)
His brother chief to save;
But ah! his reckless generous ire
Served but to share his grave!
'Mid blazing beams and scalding streams,
Through fire and smoke he dauntless broke,
Where Muggins broke before;
But sulphry stench and boiling drench,
Destroying sight, o'erwhelmed him quite—
He sank to rise no more!
Still o'er his head, while fate he braved,
His whizzing water-pipe he waved:
"Whitford and Mitford, ply your pumps—
You, Clutterbuck, come, stir your stumps,
Why are you in such doleful dumps?
A fireman, and afraid of bumps!—
What are they fear'd on? Fools! 'od rot 'em!"
Were the last words of Higginbottom.

The death of poor Braidwood half a century later stands out before our mental vision.

1814.—The evils of the early plan of distinct bodies of firemen representing different ins. cos. and their interests, as against a united brigade under proper control, was very forcibly shown by Sir Patrick Walker in the *Scots Mag.* (No. 9) of this year, in regard to a fire at Bishop's Land, High Street, Edin. He says:

> Allow me to state a general view of the chief defects to which I have been a witness in the means of assistance used in cases of fire, with a few hints at their improvement. . . . The first and chief one originates in having co. engines, which creates a degree of jealousy among the men who work them that I lament to say seems, for the most part, to increase with the fury of the flames; and at the moment when all success depends upon a union of their efforts, then are they the most discordant. . . . A prem. no doubt adds to the inducement to hasten forward the engines; but that is a small part of the bus., for you have soon many more engines than you require, or have water for; and in place of 2 or 3 well supplied, according to the circumstances of the case, you have a whole dozen of them running counter, and depriving each other of the requisite supply of water, much of which is not only consequently wasted, *but perhaps also no engine* has a sufficient supply to enable it to work with effect; of course the exertion of all is diminished, and the character of a good engine too often lost.
>
> The most effectual remedy is to abolish all names or marks that distinguish co. engines, and form the whole into one body on military principles; a regiment, as it were, would be formed of firemen, and the men, as in cos., would be attached to the different engines, which would be like them

> numbered. The men of each co. or engine, classed according to their individual qualifications, under intelligent men as non-commissioned officers, so as to form a regular gradation and chain of responsibility from the highest to the lowest, would enable you to work an engine with all the regularity of a piece of artillery, and men could be easily detached on particular services, such as to strengthen the operations of a particular engine, etc., as occasion might require. Thus a great and combined effect would at once be given to the whole, in a way that must insure success and prevent accidents.
>
> The second evil is the great waste of water by hand-carrying, which in itself creates a great confusion. If the remedy above suggested is adopted, this will, as a subordinate part of it, be at the same time remedied; for the combined interest of the whole will lead the firemen to join their united pipes to the firecock, which is often beyond the reach of any individual engine, and of consequence a more regular supply of water will, without waste or confusion, be brought to the point of action, and be distributed under the direction of the superintendent officer to such engines as he may judge most serviceable, either from superiority in their equipment or position. (See 1824.)

1824.—The *Edinburgh* Police Fire Engine Estab. was founded this year, under the following circumstances : The very defective state of the means for extinguishing fires in that city had long been the subject of remark (see 1814). In the first half of the present year three considerable fires occurred, while a still more serious fire occurred in November. This led to the formation of a proper brigade, under the control of the Police Committee, the funds being raised in part from the city, but more particularly from the subs. of the fire offices. A body of 80 firemen was trained under the command of the superintendent and other officers. Three large new manual engines were obtained from Lond., and a number of smaller engines and hand-engines, with all other appliances. The expense of the estab. was estimated at £1400 p.a. Mr. James Braidwood was appointed master of the fire engines. In subsequent reports of the Fire Engine Committee to the Gen. Board of Police Commissioners, the progress of the brigade is favourably noticed. In that dated 29 Nov. 1826, occurs the following passage :

> A set of regulations has been framed, and sanctioned by the authority of the Lord Provost, Magistrates, and Sheriff, with a view of enforcing these duties ; and the Committee have much satisfaction in stating to the Board that under a very minute personal inspection, by many of them individually, upon occasions of fire, they have reason to be pleased with the conduct of the whole individuals belonging to the estab. In particular they consider it due to Mr. Braidwood, the master of the engines, to report that he has not only shown the most indefatigable zeal, assiduity, and attention in forwarding the views of the Committee for procuring the outfit of the estab., and in placing it and keeping it in the best possible order; but upon all occasions of fire, his steady coolness, self-possession, good judgment, and intrepidity have been most marked and deserving of approbation. The appointment of an assistant to the master has been of very recent date, and was suggested in consequence of the heavy expenses which came upon the Committee in getting trifling repairs executed upon the engines, hose, and apparatus, some portions of which are necessarily injured more or less upon every occasion of a turn-out. . . .

In reference to the fires of 1824, a sub. amounting to nearly £12,000 had been raised ; and after paying all proper claims for damage (not otherwise provided for) and for services, a bal. of nearly £5000 remained, and this was applied, with the assent of the subscribers, to the estab. of a fund out of which to provide for such firemen as might be injured in the execution of their duties, and for the families of those who should be killed.

1825.—Another attempt, such as had been made by Sir Frederick Morton Eden in 1808, was again made this year, with more successful results. Various changes had occurred among the London ins. cos., several fire offices had passed out of existence, and others having more than one branch of bus. had relinquished fire ins.; so that while a few years before the different offices had maintained about 50 fire engines, the number was, about this period, reduced to 38. It was thought a favourable time to introduce a change. Accordingly the *Sun*, *Union*, and *Royal Exchange* offices placed their engines and men under one Supt.; and soon afterwards these were joined by the *Atlas* and the *Phœnix*. Thus a powerful nucleus for an efficient brigade was formed. The other offices, however, delayed joining. (See 1833.)

1830.—By 11 Geo. IV. c. 27, called the Lighting and Watching Act, and extending to the whole of E. and W. at the option of towns and districts, provisions were made for providing fire engines with pipes, and other utensils necessary for the same, to be paid for out of a special rate.

Mr. Braidwood, then master of the fire engines in Edin., pub. a work : *On the Construction of Fire Engines, and Apparatus, the Training of Firemen, and the Method of Proceeding in Cases of Fire;* from which we draw a few suggestions of a practical character. His views of the best classes from which to select firemen will be given under FIREMEN. The following passage relates to the conveying instructions to the brigade when at work :

> Amidst the noise and confusion which more or less attends all fires, I have found considerable difficulty in being able to convey the necessary orders to the firemen in such a manner as not to be liable to misapprehension. I tried a speaking-trumpet ; but finding it of no advantage, it was speedily abandoned. It appeared to me, indeed, that while it increased the sound of the voice, by the deep tone which it gave, it brought it into greater accordance with the surrounding noise. I tried a boatswain's call, which I have found to answer much better. Its shrill, peircing note is so unlike any other sound usually heard at a fire, that it immediately attracts the attention of the firemen. By varying the calls, I have now estab. a mode of communication not easily misunderstood, and sufficiently precise for the circumstances to which it is adapted, and which I now find of very great convenience.

We do not reproduce his code, as we believe it has more recently been simplified.

He gives an account of the various operations necessary to enable the brigade to get its engines to work, and says : "Although these operations may appear complicated, they are all completed, and the engine in full play, with 3 lengths, or 120 feet of hose, in

1 minute 10 seconds, including the time required for the water to fill the engine as far as to allow it to work." He describes the course of training he had set on foot for the men, which included regular practice in taking the hose up the common stairs peculiar to the Scotch towns, and also by drawing them up by ropes on the outside, "and generally in accustoming themselves to and providing against every circumstance which may be anticipated in course of fire."

He considers that where fire engines are kept, they should be tried at least once a month; and then the following practical hints:

> There should not be less than 5 or 6 men attached to each engine, who should be properly instructed and drilled to act as captains, sergeants, and pioneers, to take charge of the engine, and to guide the people who work at the levers. Great care should be taken that the engines are not damaged by the almost ungovernable fury with which the populace sometimes work for the first 10 or 15 minutes. I have on more than one occasion seen engines of the best and most substantial construction rendered nearly useless by the first or second stroke. This violent exertion, instead of serving any good purpose, does more harm than the mere chance of damaging the engines: persons who have exerted themselves in this way go home, and descant to their neighbours on the fearful toil they have undergone, and the violent colds they have caught from their exertions, and thus raise a prejudice in the minds of others against rendering assistance on similar occasions.

Again:

> When the hose is attached to the engine filled with water, the man who holds the director ["branch"], accompanied by another, should get so near the fire inside the house *that the water from the director may strike the burning materials*. If he cannot accomplish this standing, he must get down on his hands and knees, and creep forward, those behind handing up the hose. A stratum of fresh air is almost always to be depended on from 6 to 12 inches from the floor, so that if the air be not respirable to a person standing upright, he should instantly get down. I have often observed this fact, which is indeed well known: but I once saw an example of it which appeared to be so striking, that I shall now relate it. A fire had broken out in the third floor of a house, and when I reached the top of the stairs the smoke was rolling in thick, heavy masses, which prevented me from seeing 6 inches before me. I immediately got down on the floor, above which for a space of about 8 inches the air seemed to be remarkably clear and bright. I could distinctly see the feet of the tables and other furniture in the apartment; the flames in this space burning as vivid and distinct as the flame of a candle, while all above the smoke was so thick that the eye could not penetrate it. The fire had already burst through three out of the five windows in the apartment, yet when lying flat on the floor no inconvenience was felt except from the heat.
>
> When the fire has broken through a floor, the supply of air along that floor is not to be depended on, the fire drawing the principal supply of air from the apartments below. . . .
>
> When approaching a fire, it should always be by the door, if possible. When this is attended to, it is much easier to shift the hose from one apartment to another; and the current of fresh air entering by the door, and proceeding along the passages, makes respiration easier and safer than elsewhere. When entrance by the door is impracticable, and access is to be gained by a window, the flames frequently burst through in such a manner as to render the advance in the first instance impossible. In that case, the director should be pointed against the window nearly in a perpendicular direction; the water striking the lintel, and falling round inside the window, will soon extinguish the fire at that point sufficiently to render an entrance practicable.
>
> The old plan of standing with the director in the street and throwing the water into the windows is a very random way of going to work; and for my own part, although I have seen it repeatedly tried, I never saw it attended with success. . . .

1833.—On the 1st Jan. this year, the "*London Fire Engine* Estab." came into being, with Mr. James Braidwood for its chief. This happy consummation of various former attempts was brought about mainly through the influence of Mr. Charles Bell Forde, one of the then managers of *Sun* Fire Office—a man of mind and mark. He brought together 10 of the leading offices, viz. the *Alliance*, *Atlas*, *Globe*, *Imperial*, *Lond. Assu.*, *Protector*, *Royal Exchange*, *Sun*, *Union*, and *Westminster*. Other offices soon joined. London was divided into 5 districts, having among them 19 stations, with 80 trained firemen. The expense of the estab. was £8000 p.a., contributed by the several offices in regard to the amount of their ins. in force, as intimated by the fire ins. duty collected. The affairs were to be managed by a committee consisting of a director or other principal officer of each fire office contributing. The Estab. continued to grow and to render good service in the subduing of fires. (See 1862.)

By 3 & 4 Wm. IV. c. 90, the Act of 1830 was repealed, but re-enacted in a more complete and extended form. The provisions, so far as they affect our present subject, remained the same.

1842.—There was enacted 5 & 6 Vict. c. cvi. (local and personal)—*An Act for the improvement, good government and police regulation of the Borough of Liverpool.* Secs. 140 to 168 relate to Extinguishment of Fire, Fire Brigade, etc. This portion of the Act resembles in its provisions the clauses of the Salford Improvement Act quoted under date 1862. A special ann. rate not exceeding 1*s.* 2*d.* in the £ is authorized; and by sec. 168, the agent of any ins. office who has paid any demand made by the superintendent in respect of extraordinary expenses is authorized to recover it from his office.

1844.—There was enacted 7 & 8 Vict. c. xl. (local)—"The *Manchester* Gov. and Police Regulation Act." Secs. 115 to 122 relate to fire police. Sec. 119 is as follows:

> Whereas in the case of a fire certain extraordinary expenses are incurred, that is to say, in wages of the fire police consequent upon the occasion, in add. to their ordinary allowance, and in the pay of further assistance necessarily employed on such occasions, and in the wear and tear of engines and utensils, and by damage and injury sustained by such fires; *and whereas it is expedient that the proprietors of property endangered by such fire should join in contributing towards such extraordinary expenses*, and that all such extraordinary expenses as aforesaid should be borne expressly in fair and equal proportions by and amongst the persons interested in the preservation of property to which assistance has been *bonâ fide* given or extended by such police in case of fire; be it therefore enacted,

> that all such extraordinary expenses as aforesaid in the case of any fire shall be paid to the superintendent of the said fire police estab. by the respective proprietors of property, in proportion to the value of such respective property as aforesaid: provided that no proprietor shall be liable to pay a larger sum than the amount of his property.

Any difference between the said proprietors, or any of them, and the superintendent, is to be settled by two justices.

1845.—The Commissioners for Inquiring into the State of Large Towns and Populous Districts, in their 2nd Rep. pub. this year, speak of the arrangements for the estab. of a proper service of fire engines, and the necessary accompaniment of officers, as being very defective; and they recommend the estab. of brigades, under the care of an efficient superintendent. [FIRE EXTINGUISHMENT.]

1847.—By 10 & 11 Vict. c 89—the Town Police Clauses Act—it is provided that:

> 32. The Commissioners may purchase or provide such engines for extinguishing fire, and such water buckets, pipes, and other appurtenances for such engines, and such fire escapes and other implements for safety or use in case of fire, and may purchase, keep, or hire such horses for drawing such engines as they think fit, and may build, provide, or hire places for keeping such engines, with their appurtenances, and may employ a proper number of persons to act as firemen, and may make such rules for their regulation as they think proper, and give such firemen and other persons such salaries and such rewards for their exertions in cases of fire as they think fit.

This Act applies to districts where the Public Health and Local Gov. Acts are applied, and to certain other places. [FIRE EXTINGUISHMENT.] [FIRE PROTECTION.]

1850.—In a paper by Mr. Samuel Brown, "*On the Fires of Lond.*," etc., pub. in vol. i. of *Assu. Mag.* this year, he ventures to suggest whether the electric telegraph might not be used in regard to conveying notices of fires!

1856.—Mr. Braidwood, in his paper on "Fires" read before the So. of Arts this year, refers to the volunteer system of the U.S., and also speaks of the plan adopted in Lond. and elsewhere, arriving at the conclusion that "perhaps each is best suited for the place where it exists." He also gave some account of the training which the men of the Lond. Brigade passed through. This we shall notice under the head of FIREMEN. He added: "It takes years of constant work to make a thorough good fireman."

1860.—There was pub. in the U.S.: *The Fireman's Own Book: containing accounts of fires throughout the U.S., as well as other countries; remarkable escapes from the devouring element; heroic conduct of firemen in cases of danger; means of extinguishing fires; accounts of firemen who have lost their lives while on duty; together with facts, incidents, and suggestions, interesting and valuable to firemen and citizens generally.* The book was mainly designed for the use of fire brigades. The compiler is Mr. George P. Little.

1861.—Mr. James Moncrieff Wilson (then Manager of the *Patriotic*) propounded and pub. a plan for a fire brigade in Dublin.

1862.—A Select Parl. Committee was appointed "to inquire into the existing state of legislation, and of any existing arrangements for the protection of life and property against fires in the metropolis." The main features of this inquiry will fall to be considered under FIRE PROTECTION; but we propose to give here such parts of the Report of the Committee as relate to Fire Brigades. Regarding those of the various ins. cos. in earlier days, they say:

> 9. For many years previous to 1832 the principal fire ins. offices in Lond. kept fire brigades at their individual expense; to these brigades were attached a considerable number of men usually occupied as Thames watermen, retained in the service of the different fire offices, from whom they received payment only on the occurrence of fires, and they wore the livery and badge of the respective cos. *These fire brigades were considered as giving notoriety to the different ins. cos., and a considerable rivalry was productive naturally of good, as well as of some considerable evil on occasion of fires.*
>
> 10. The large expenses thus incurred induced an attempt to be made, which was effectually carried out in the year 1832, by Mr. C. Bell Forde, a leading director of the *Sun* Fire Office, to form one brigade for the purpose of promoting economy, as well as greater efficiency. The Lond. Fire Brigade thus commenced its operations under the united sanction of, and from funds contributed by, most of the leading ins. offices in Lond.
>
> 11. The expense at first was £8000 p.a., the number of men employed 80, and the number of stations 19. This expense has been gradually increasing until it has reached nearly £25,000 during the past year. The number of the men is now 127, and the stations 20. . . .
>
> 15. The evidence of every witness bore testimony to the high state of efficiency to which the brigade was brought under the superintendence of the late Mr. Braidwood; and it appears to your committee that it is likely to maintain its reputation under the present superintendent Captain Shaw.
>
> 16. Whatever new arrangements may be made, the Committee cannot avoid expressing an opinion that the services of the existing staff of the Lond. Fire Brigade ought to be made available in connexion with any new system.
>
> 17. In add. to the Lond. Fire Brigade, brigades have been estab. and are maintained at considerable expense, and in a very efficient state, by all the dock cos. in and near to Lond. [DOCKS.]
>
> 18. The arrangements at the East and West India Docks appear to be peculiarly good, and more especially as regards the supply and use of water through means of hydraulic force. In other parts of Lond. there are arrangements made by the owners of property for their own especial protection. Your Committee would, however, direct particular attention to the estab. fire brigade kept up in a most efficient and highly praiseworthy manner by Mr. Hodges, at an expense of not less than about £400 a year.
>
> 19. They also call attention to a smaller estab. kept up at the sole expense of Messrs. Brown, Lennox, & Co., and of great use in the protection of property against fire in the Isle of Dogs. . . .
>
> 21. The Committee, however, cannot omit to notice that in some of the neighbouring parishes efficient fire estab. are maintained, and charged on parochial rates. This is especially to be noticed at Hackney, where a very efficient brigade is maintained, at an expense of about £500 p.a., which is about ½d. in the £ in the rating of the parish.

Reference to this Rep. will be found under other heads, as FIRE EXTINGUISHMENT; FIRE, LOSS OF LIFE BY, etc. No result immediately followed. (See 1865.)

The then Lord Mayor Cubitt was called as a witness before this Committee. He said, that the late Mr. Braidwood "had by popular consent unlimited authority to do what he thought fit;" and he was of opinion that the Brigade should be commanded by a person "who in time of need should have power as despotic as that of the colonel of a regiment, or the captain of a line-of-battle-ship; that he should be subject to no sort of control; that he should have the assistance of the police, as the firemen now have, in keeping off the multitude, and in preventing depredations upon the goods, but that their action should be altogether independent, separate, and different; the police being simply charged with the preservation of property, the fireman's duty being to contend with the raging elements, and to extinguish the fire in the quickest and most efficient manner."

There was enacted 25 & 26 Vict. c. cciii. (local)—"The *Aberdeen* Police and Water Works Act, 1862," secs. 147 to 158 of which relate to the suppression of fires and maintenance of fire engines.

Same Session, the 25 & 26 Vict. c. cciv. (local)—"The *Glasgow* Police Act, 1862." Secs. 160 to 170 relate to prevention and suppression of fires.

Same Session, the 25 & 26 Vict. c. ccv.—"The *Salford* Improvement Act," secs. 270 to 281 of which give powers to the Corp. for preventing and extinguishing fires. These sec. we propose to notice in some detail. The Corp. may maintain and provide fire police stations, etc. (270); also fire-engines and firemen (271). Then the following as to the extraordinary expenses of fires:

> 274. And whereas it is expedient that all extraordinary expenses occasioned by any fire *should be borne by and amongst all the respective ins. offices who have insured against fire, property endangered, or to which assistance has been given or extended by such fire police estab., and by and amongst all the respective owners of uninsured property endangered, or to which such assistance as aforesaid has been given or extended, in fair and equal proportions*: be it enacted that all such extraordinary expenses aforesaid in the case of any fire shall be taken to be the wages of the fire police consequent upon the occasion, in add. to their ordinary allowance, and the payments for further assistance necessarily employed on such occasions, together with such sum as the corp. shall think reasonable for the use and risk of their engines and utensils, and shall be paid to the superintendent of the said fire police estab. by the respective ins. offices so having ins. as aforesaid, in proportion to the amount by them respectively insured on such property, and by the respective owners of uninsured property in proportion to the value of such respective property as aforesaid; provided that no such office shall in any case be liable to pay a larger sum than the amount by such office insured, or than the amount of the property upon which the ins. shall have been made by such office, nor shall any owner be liable to pay a larger sum than the amount of his property uninsured; and when any property is ins. in two or more ins. offices, each such office shall only be liable in proportion to the respective amounts by such office ins.

Any dispute to be settled by the justices. There is a further clause to meet the case of property ins. for a sum materially less than its value:

> 276. If any such property as aforesaid be ins. in any ins. office in an amount less than the value of the property in hazard according to a reasonable estimate thereof for the purpose of ins., such ins. office shall not be liable to pay or contribute towards the expenses aforesaid in respect of more than the proportion which the amount so ins. may bear to the whole value of such property according to such estimate as aforesaid; and the owner of any such property ins. in any such office in an amount in the whole less than its value so estimated as aforesaid shall be liable to pay or contribute the expenses aforesaid in respect of the residue of the amount of the value so estimated as aforesaid as an uninsured owner to that extent, and shall be taken to be an owner of uninsured property to the amount of such residue for all the purposes of this Act.

If the amount ins. shall become a question of dispute, the justices may adjourn their proceedings until the dispute be terminated.

1863.—In the *Companion to the British Almanack* for this year there is an art., *Fires and Fire Brigades at Home and Abroad*, wherein occur the following passages, which may be taken as supplementary to and explanatory of some of the preceding. Thus:

> The Fire Brigade system in the metropolis, the organization for the prevention and extinction of fires, is on its trial. Every one praises the men who hazard their lives in this service; but those who are most conversant with the subject agree that the force is too small, and that it cannot well be augmented without a re-arrangement of rights, duties, and responsibilities. Many of the large towns in the provinces are far ahead of Lond. in this matter.
>
> The only legal enactment in force in reference to fire engines and their management in the metropolis is as old as 1774. An Act of that date obliges every parish to keep one large engine and one small, a leathern pipe, and a certain number of ladders. But the Lond. of those days was a comparatively small place, and excluded districts and parishes which are now thickly inhabited. This requirement, although obeyed in some parishes, is at the present time wholly neglected in others, and is insufficiently attended to in nearly all—the engines being small, often out of repair, and clumsily managed. Some of the out-parishes avail themselves of the Act passed in 1833, authorizing places beyond the B. of Mort. to organize local fire brigades on an improved system. *Hackney* pursues a creditable course in this matter. There are 5 efficient engines in 5 different parts of the parish, under the management of men who are regularly paid wages for the service, the cost being defrayed out of the poor-rate. *Islington*, although a large parish, has only 2 engines, and 3 men to attend to them. *Camberwell* has 4 engines, but only 3 men to attend them, the fourth being left to the care of the able-bodied paupers in the workhouse. The various parishes north and south of the Thames differ greatly in their arrangements, but there seems to be scarcely one besides Hackney really effective.
>
> All who know anything of fires in Lond. are aware that these parish engines render very little service, partly owing to the smallness of the size, partly to ill-management. The regular firemen do most of the work with engines of greater power. Who those regular firemen are, and under what system they are supported, are matters very little understood by the general public. The ins. offices are known to be concerned in the matter, but not in the way familiar to the last generation.
>
> The origin of the present system was simply as follows: Until the year 1832 every fire ins. office in Lond. maintained its own separate staff of firemen and engines. The men were not wholly engaged as firemen, and thus there was frequent difficulty in getting them and their engines together with sufficient readiness. It was found, too, that the men quarrelled and fought for such rewards as came

> to their lot for promptness in attendance at fires ; and even at the best the exertions of each body of men with their engines were too much limited to the saving of such houses and property as were ins. in their particular office. . . .

The writer then details the efforts of Mr. Forde in 1832, resulting in the formation of the Fire Brigade in 1833, as we have already set forth.

The Lond. Brigade at this date consisted of 40 land engines, 50 horses, and about 120 men. There were 14 permanent stations, half of which had but one engine each. "Only one steam land fire engine is yet provided ; it is kept at Watling Street, not exactly with the steam up, but with the water always nearly boiling, insomuch that the steam is ready by the time the horses have drawn the engine to the locality of the fire. This engine far excels the hand engines in efficiency, but is ponderous and difficult to move."

The F. Brigade appliances at the Docks are next reviewed, and the writer proceeds :

> It will be seen, then, that there are parish engines, brigade engines, and private engines in the metropolis, maintained under very varied arrangements. There is much reason to be dissatisfied with the mode in which the brigade engines are supplied with water, and there have been some rather remarkable propositions made in connexion with this matter. . . . For instance, some persons reasonably urge that the district or house-top telegraph should be rendered available for communicating instantly to a distance the news of the exact locality of a fire. The men who look out at night from the tops of the engine stations are often at fault on this matter, *and there seems no reason to doubt that the telegraph wires might be rendered available as messengers.* [It has to be remembered that this was written within the last 12 or 13 years !] Then again there are suggestions concerning the use of other agents than water for extinguishing flame. It is known that steam acts in a remarkable way when so applied, and that many chemical fumes stifle the flames almost instantly. No practical reforms, however, have been made in this direction.

1865.—There was enacted this year the "Metropolitan Fire Brigade Act, 1865," which provided (sec. 4) that on and after 1st Jan. 1866, the duty of extinguishing fires, and protecting life and property in case of fire within the metropolis be entrusted to the Metropolitan Board of Works : "and with a view to the performance of that duty it shall be lawful for them to provide and maintain an efficient force of firemen, and to furnish them with all such fire engines, horses, accoutrements, tools, and implements as may be necessary for the complete equipment of the force, or conducive to the efficient performance of their duties."

5. The Board might take on lease, purchase, or otherwise acquire, stations for engines, stables, houses for firemen, and such other houses, buildings, or land, as they might think requisite for carrying into effect the purposes of this Act ; and might from time to time sell any property so acquired. The Board might also contract for the providing of telegraph communication between its several stations and elsewhere.

6. On and after date named, all stations, fire engines, fire escapes, plant, and other property belonging to or used by the fire engine estab. of the fire offices in the metropolis was to become the property of the Board, but subject to all the legal obligations attaching thereto, including the payment of all pensions which had been granted to the members of the said fire engine estab. The Board might also, if it thought fit, purchase the stations, fire engines, plant, etc., of any parish or person within its jurisdiction.

7. The force to be under the command of a chief officer, who, as also the men, was to be appointed and removed at the pleasure of the Board.

8. The Board to pay such salaries and gratuities as it might think expedient ; also gratuities to turncocks for speedy supply of water.

9. Power to make regulations for the training, discipline, and good conduct of the men belonging to the Brigade ; and to inflict fines, etc., for bad conduct.

The remaining provisions of the Act fall to be dealt with mainly under the general head of FIRE PROTECTION. Sec. 12, in reference to power of Brigade to pull down property, etc., etc., is of considerable importance.

In a paper read before the So. of Arts by Mr. C. F. T. Young, *On the Best Organisation for Protecting Lond. from the Ravages of Fire*, he advocated the formation of volunteer fire brigades. [FIRE BRIGADES, VOLUNTEER.]

There was enacted, also, 28 & 29 Vict. c. cccxi. (local)—"The *Oldham* Borough Improvement Act, 1865." Clauses 256 to 264 relate to fire engines and fire police. We propose to give a brief outline of these. Power to provide fire police stations, firemen's dwellings, etc. (256) ; power to provide engines, firemen, fire escapes, etc, and to employ such persons as superintendents and firemen on such terms, and "allow them such wages and such rewards for exertion in case of fire," and make such bye-laws, etc., as they think fit (257) ; power to break open premises in case of fire (259) ; corp. to provide fireplugs, etc., and "shall at all times keep charged with water all their pipes to which fireplugs are fixed, and shall allow all persons at all times to take and use water for extinguishing fire without payment" (260) ; the corp. may send any fire engine and any part of the fire police estab. beyond the borough to extinguish fire ; penalties as to chimneys on fire (262) ; restriction on making fireworks, etc. (263) ; licensing powers as to gunpowder, petroleum, etc. (264) ; the expenses of the corp. in carrying the Act into execution to be paid out of the borough fund, formed by the receipt of the rents and income of the corp., aided by a borough rate (292).

1866.—Mr. Charles F. T. Young, C.E., pub. his well-known work : *Fires, Fire Engines, and Fire Brigades ; with a Hist. of Manual and Steam Fire Engines, their Construction, Use, and Management ; Remarks on Fireproof Buildings and the Preservation of Life from Fire : Statistics of the Fire Appliances in English Towns ; Foreign Fire*

Systems; Hints for the Promotion of and Rules for Fire Brigades; and an Account of American Steam Fire Engines. This book contains much that is practical and valuable to all engaged in the formation and management of fire brigades, combined with many expressions of animus which might with advantage have been omitted. We draw the following useful passages from it :

The brigade should be frequently exercised in their duties and working the engines, in order that they may be able to get them to work with the greatest possible expedition. Fires occurring most frequently in the night, the most appropriate time for drills would be in the morning before dawn, putting the parts, etc., together by lamp-light.

The principles of fire-extinguishing—the principles, construction, use, and management of engines and fire-extinguishing appliances, might be easily and pleasantly taught by diagrams and explanations arranged in the form of short lectures, further improved by active practice at drills, each man taking his turn at each particular duty involved, until all are proficient, theoretically and practically, in all that can be required of firemen.

Emulation might be excited and maintained amongst the members by dividing them into sections, and setting each to take out the engine, lay out the hose, and put the engine into position, just as if it only waited for the water, carefully noting the time occupied in this ; then let them restore everything to its place, and take the engine back to its house, noting also the time occupied in this operation ; and it will be found that the members will soon become exceedingly expert, and capable of performing their duties in an efficient and proper manner, and with the greatest advantage, whenever it may unfortunately happen that their services are called into requisition to combat the terrible opponent—fire.

It is most desirable and important that the exercises and drills of the members with the engines and appliances should be carried out in the night as well as in the day, in order that they may be able to do their duty properly if called out at that time—a fire being quite as likely to break out in the night as in the day-time. A moment's reflection will show how desirable this is, and how certain it must be to give good results; for by the members being accustomed beforehand to get to work after dark, and knowing how to proceed, much confusion, inconvenience, and loss of time will be prevented.

The extinguishing of fire and the best mode of attacking it should be carefully studied by all members of the brigade in every town where one is estab. They should, as far as possible, make themselves acquainted with the arrangements and plan of any large factories, mills, or other buildings in their neighbourhood, so as to be able to act with promptitude and certainty in case their services should ever be required at them ; and an eye should be had to the readiest means of getting the engines near, and to where the water may be easiest obtained. Many other points will hardly fail to suggest themselves to any one who studies the subject, all of which, if well thought over, and as it were prearranged, will add in no small degree to the efficiency of the brigade whenever called out, and to the ease, convenience, and certainty with which they will do their work.

It is very desirable that members of fire brigades should make themselves acquainted with and study the various modes of construction employed in the buildings in the neighbourhood in which their services may be required, both to enable them to act readily in the most efficient manner in case their services should be called for at any of them ; and also that they may do their work in them without endangering their lives, or those of their comrades.

In all towns with a regular water supply maps should be provided, showing the position of the plugs in each street, and the spots where the readiest supply of water for the engines can be obtained, both in the town and its immediate neighbourhood, where there is any likelihood of the services of the engines being required. These should be hung up in the engine-house, or in every station if there be more than one ; and each member of the brigade should have a copy, which he might keep at home and study at his leisure ; all of which will be found to save time and add to the efficiency of the arrangements, by enabling the engines at once to be taken to the most suitable position for obtaining water, if the exact locality of the fire be known when the call is given.

Where there is no regular water supply, but the water is obtained from pumps, wells, ponds, or other sources, it will be found a very excellent precaution for the superintendent and leading members of the brigade to make themselves acquainted with such as there are in the district they have to protect, and study how to proceed in case of being called to a fire in any part of the neighbourhood. The object is to save loss of time in finding out where water is to be had, how it is to be got at, and what the supply is likely to be. The deficiency of water, no matter how efficient the brigade or engines may be, is an effectual stopper on any useful results towards extinguishing the fire that would otherwise be obtained by their presence.

An inventory of all the plant, appliances, and equipments belonging to the brigade should be carefully taken, and kept duly posted with all the add. that may be made. Every 6 months a thorough overhaul of the various things belonging to the brigade should be properly carried out, and particulars noted of the state of repair in which they are found, in order that the ann. rep. of the state of equipments may be easily made up, and show everything in the condition it should be.

Up to within a comparatively recent period the idea of producing the maximum effect with the minimum of water in extinguishing fires was a matter little thought of and little practised. To get first to a fire, to get a crowd round the engine, and to be the first to get to work, to stand in the street, and send a stream of water through a window, over a roof, or against a wall, and practise at long range, was the regular system followed; and the science of extinguishing a fire promptly, smartly, and with little damage from water, and without parade, was quite out of the question.

It is always advisable, on arriving at a fire, or premises to which a brigade may have been called to extinguish a fire, for the chief to carefully note whether it can be subdued by the hand pump, which can generally be done whilst the engine is getting ready, so as to avoid the damage certain to be caused where the engine is used and the pump would have been as efficient. Great judgment is needed on this point, it being too much the rule to drown out the premises with the engine at all hazards, because there is a fire in them, rather than take the trouble to see whether it can be extinguished by less powerful means. It seems too much the system in many places that because an engine is run to the fire, it must therefore be used. This is a great fallacy, and the judgment of the chief and his skill as a fireman are always imperilled by this very point.

Of late years, however, a change has taken place in all this, and it has been found that it is a better plan to get as close as possible to the point at which the fire originates and has taken hold; so that it may either be extinguished at once, checked in the bud, or else restrained until sufficient force can be brought to bear on it and knock it out.

1867.—The Poor Law Amendment Act, 1867 (30 & 31 Vict. c. 106, sec. 29), gives power to the vestry of *any parish*, where there is no town council, local board, or other competent authority, to provide any engine, ladder, or fire escape for general use in the parish, and also to provide a proper place to keep the same, and also for the maintenance and repair thereof, and "the cost of suitable implements and accoutrements," out of the poor-rate.

1868.—The contributions of the ins. offices taking fire risks in Lond. to the Metropolitan F. Brigade during this year amounted to £13,794 14*s*. 4*d*., being at the rate of £35 per million insured, in accordance with the Act of 1865. The sums insured in the metropolis were returned at £394,130,651.

1873.—Medical officers are appointed in the different districts of the metropolis to look after the health of the men.

Experiments were made in view of rendering the floating engines of the Metropolitan Fire Brigade more generally useful. It often happens, when fires occur during low-tide, that the floats cannot approach within several hundred yards the buildings wherein the fire exists. Mr. J. B. Rogers has invented an apparatus for firing a "block," with rope attached, on to the shore from a mortar. The block being made fast, a hose-raft is then launched, and its destination can be regulated by those on the float. From this raft the water can be directed as required.

1874.—The operations of the Metropolitan Fire Brigade now extend over an area of 110 square miles. From the Report of the Metropolitan Board of Works for this year we gather the following details:

There are 46 stations of the Brigade on land, in addition to 4 river stations where 4 floating engines are moored. There are 106 fire escape stations, 54 telegraph lines, 86 miles of telegraph lines, 3 floating steam fire engines, 1 iron barge to carry 1 land steam fire engine, 5 large land steam fire engines, 21 small land steam fire engines, 14 seven-inch manual fire engines, 59 six-inch manual fire engines, 42 under six-inch manual fire engines, 129 fire escapes, and 396 firemen, including the chief officer, the superintendents, and all ranks. The number of firemen employed on the several watches kept up throughout the metropolis is at present 108 by day and 181 by night, making a total of 289 in every 24 hours; the number of those sick, injured, on leave, or under instruction is generally between 40 and 50; the remaining men are available for general work at fires.

The number of calls for fires or supposed fires received during the year 1874 were 1750. Of these, 89 were false alarms, 88 proved to be only chimney alarms, and 1573 were calls for fires, of which 154 resulted in serious damage, and 1419 in slight damage. These figures refer only to the regular calls for fires, or supposed fires, involving the turning out of firemen, fire engines, horses, and coachmen; they do not include trifling damage by fires which were not sufficiently important to require the attendance of firemen; neither do they include the ordinary calls for chimneys on fire, which are separately accounted for. The fires of 1874, compared with those of 1873, show an increase of 25; but compared with the average of the last 10 years, there is a decrease of six. The proportion of serious to slight losses in 1874—154 to 1419—is about as favourable as the Brigade has hitherto succeeded in making it.

The number of fires in the metropolis in which life was seriously endangered during the year 1874 was 73; and the number of these in which life was lost was 19. The number of persons seriously endangered by fire was 157; of whom 134 were saved and 23 lost their lives. Of the 23 lost, 13 were taken out alive, but died afterwards in hospitals or elsewhere, and 10 were suffocated or burnt to death. The number of calls for chimneys was 3861. Of these, 1283 proved to be false alarms, and 2578 were for chimneys on fire. In these cases there was no attendance of engines, but only firemen with hand pumps. The quantity of water used for extinguishing fires in the metropolis during the year was 16,579,295 gals., or about 74,000 tons. Of this quantity, 18,931 tons, or about a fourth of the whole, was taken from rivers, canals, and docks, and the remainder from the street pipes. During the year there were 9 cases of short supply of water, 24 of late attendance of turncocks, and 14 of non-attendance, making altogether 47 cases in which the water arrangements were not satisfactory.

The following figures show the extent to which the Fire Brigade and its appliances have been increased since 1866, the year in which it came under the control of the Board. Its strength on the 1st January, 1866, and its strength on the 31st December, 1874, were respectively as follows:

	1st. Jan. 1866.		31st Dec. 1874.
Officers and men	130	...	396
Engine stations	17	...	49
River stations (with floating engines)	2	...	4
Steam engines (land)	9	...	23
Manual engines	27	...	85

It is often—very unfairly, we think—attempted by various towns and districts to obtain engines and equipments for fire brigades by levying contributions upon the various ins. offices having agencies there. This seems alike unwise and unnecessary. If the fire offices contribute to such purposes, they must charge the aggregate amount against the prems. received—hence the charge ultimately falls upon the insured. It is surely better to throw the expense on the district which will be benefited by it; and in this way the *uninsured* will have to pay their quota, as they should: for they stand doubly in need of such protection! The proper machinery for this purpose is supplied by the Acts of Parl. already quoted, more particularly the 11 Geo. IV. c. 27 (1833) [amended by 3 & 4 William IV. c. 90, s. 44], and the 30 & 31 Vict. c. 106, s. 29 (1867). [FIRE CALLS.] [FIRE DETECTORS.] [FIRE ESCAPES.] [FIRE EXTINGUISHMENT.] [FIRE PROTECTION.]

FIRE BRIGADES, FOREIGN.—Most of the European cities, more especially those in the northern countries, have fire brigades of considerable efficiency. We have already given an account of some of these under the titles of the different cities spoken of, as AMSTERDAM, BERLIN, COPENHAGEN, etc., etc.; but to obtain recent and trustworthy information is by no means easy. We shall continue to furnish information under the names of the different cities as we reach them, in preference to attempting any general summary here; but, at the same time, we desire to furnish the means of comparison between our own and foreign cities, and for this purpose a few instances will suffice.

We have obtained, since our art. was written, the following information concerning the *Berlin* Fire Brigade, as it was in 1873:

The Brigade is composed of a fire director, who exercises supreme command, a fire inspector, and 4 fire masters, all of whom are architects, and belong to the army reserve; 48 foremen, holding the rank of non-commissioned officers, and 196 privates, all bricklayers and carpenters by trade, and strong, healthy, and active men, who have served their time in the army. Besides the foregoing, there is a corps of 800 labourers, acting under the direction of the firemen, and who are employed besides as the general scavengers of the city. Two-thirds of the firemen are always on duty, while the remaining third are at liberty to follow their ordinary avocations, the general rule being for one day off duty to follow two days on. As regards the officers, however, there is no such regulation. The inspector receives a salary of 1350 thalers (about £200) per ann.; the fire masters 950 thalers, or £142; the foremen, £67; the privates, £57; and the labourers, who have to give all their time, £52. They receive their uniforms in addition.

The brigade possesses 7 floating engines, 42 horse fire engines, 9 hand engines, 4 fire escapes, with feeding pumps, water-trucks, vans for the firemen, hose-trucks, ladders, etc., in proportion. At least one fire engine from head-quarters attends every fire, whether large or small, and at important fires the entire brigade turns out. In connexion with the Berlin Fire Brigade there are 65 principal telegraph stations with signalling apparatus, and 68 smaller stations with simply warning apparatus. The entire annual cost of the Berlin Fire Brigade, including its system of telegraphy, averages between £27,000 and £28,000, of which nearly £5000 is contributed by the Government, the remainder being borne by the municipality.

A correspondent of the *Pall Mall Gazette* wrote during the same year an account of a "call" which he had witnessed, and from which we condense the following:

> Within the space of a single minute since the cry of "Fire!" was first raised, engine No. 1, with its hose and scaling ladders, and firemen mounted beside the driver, holding blazing torches and ringing a bell swung in front of the engine to warn vehicles out of the way, dashed through the gateway into the street, followed by its attendant water-barrel and a van holding some dozen firemen, whose burning torches throw a lurid light around. Labourers next march out, some dragging trucks with water-casks after them, others with fire extinguishers swung over their shoulders, and all fully equipped for action. . . . The lieutenant of police, having been apprized by telegraph at the neighbouring post of the fire, makes his appearance in full uniform. Other engines now arrive from all directions, horses plunging, bells ringing, and torches blazing. Each engine on its arrival is directed to take up its position in the rear of its predecessors, and within 10 or 15 minutes the line of engines, water-carts, firemen's vans, hose-trucks, water-casks, and companies of labourers, extends to nearly a quarter of a mile in length, lighted up from one end to the other by hundreds of flaring torches, the burning

> flakes from which cover the ground, while myriads of sparks and great volumes of smoke scud before the wind.
>
> The scaling-ladders are unhooked from the engines, which take up their positions while the hose is being unrolled and attached; the water-carts and trucks yield an immediate supply of water, and in a few minutes jets are playing on the blazing building, against the uninjured end of which the first scaling-ladder is promptly raised. A fireman with a second ladder hanging on to his belt proceeds to mount it, detaches the reserve ladder, and, raising it above his head, thrusts it through the glass of the second floor window, and hooks it securely to the window-sill. A third ladder is handed up to him, which he suspends to his belt, and, mounting the second ladder, secures it in like manner to the window-sill of the third floor. Other ladders are passed up and hooked on after the same fashion, until, in a little more time than it has taken me to describe the process, the roof of the house is gained. Men now follow with long hose, and by this time the fireplugs are yielding an unlimited supply of water, for the Berlin water companies, in addition to being required to have their plugs within a distance of 80 yards from each other, are compelled to have their mains always turned on, a command of the fire is speedily gained.

While taking full credit for the admirable discipline of the men under his command, Fire Director Scabell attributes the mastery which the Berlin Brigade almost invariably gains over even the most threatening fires to three causes:—1. The completeness of its telegraphic system, which insures instant information of a fire having broken out. 2. The large number of fireplugs, and the mains being always turned on. 3. The breadth of the Berlin streets, and the absence of courts and other narrow thoroughfares such as abound in London.

Cities.	Pop.	Engines.	Men.	Horses.
New York	942,292	38	690	156
Philadelphia... ...	674,012	27	404	94
Brooklyn	396,100	26	171	70
St. Louis	310,864	17	100	64
Chicago...	298,977	27	201	87
Baltimore	267,354	18	139	64
Boston	250,526	26	472	69
Cincinnati	216,240	18	155	80
New Orleans... ...	191,418	19	900	90
San Francisco ...	149,473	14	201	45
Buffalo, N. Y. ...	117,714	8	470	25
Washington	109,200	5	120	34
Newark, N. J. ...	105,060	8	180	22
Louisville, Ky. ...	100,753	9	51	34
Cleveland, O. ..	92,829	10	112	34
Pittsburg, Pa. ...	86,076	7	77	28
Jersey City, N. J....	82,456	10	395	45
Detroit, Mich. ...	79,577	8	79	24
Milwaukee, Wis....	71,440	4	60	23
Albany, N.Y. ...	69,422	8	140	24
Providence, R. I....	68,904	9	120	28
Rochester, N. Y....	62,386	5	250	15
Alleghany City, Pa.	53,180	4	41	19
Richmond, Va. ...	51,038	4	93	14
New Haven, Conn.	50,840	6	139	18

In the U.S. the fire brigade arrangements of most of the cities are now very complete. The annexed T. recently [1875] compiled by the *Evening Mail* shows the complement of steam fire engines, men, and horses of the fire departments of the several cities mentioned, the figures indicating the pop. being based upon the returns of the last U. S. census.

The steam fire engines used in the American cities are usually of great power.

A similar T. for European cities would be most instructive.

We give from a recent number of the *New York Sun* the following particulars of the *New York* Brigade—which appears to have been increased since the preceding T. was prepared. There are in the city 42 engine companies, one fire boat (belonging to the department, and the use of three others can be obtained when their services are required), 18 hook and ladder cos. and 4 chemical engines. The safety-valves are set at 100 pounds on all the engines. All the steamers are Amoskeags, the chemical engines are Babcocks. There are 548 fire alarm boxes in working order, and 300 are soon to be put in the new districts. There are 134 officers, 554 firemen, 36 hosemen and 18 laddermen. Total, 742. The commissioners have contracted for four patent aerial ladders, that can be raised to a height of 100 feet in two minutes and a half. They are to be ready for use in a few days. They can be raised in the middle of the street without touching adjoining buildings, and will be valuable fire escapes. The department is divided into ten battalions. The up-town battalions cover more ground than those in the lower part of the city. Each engine co. has a foreman, an assistant foreman, an engineer and assistant engineer, and eight firemen. The first officer to arrive at a fire is in charge till a higher officer arrives; every man takes an interest in his work; nearly every officer has reached his position by promotion from the ranks on account of meritorious service.

FIRE BRIGADES, PROVINCIAL.—It will have been gathered from our preceding art. FIRE BRIGADES, that there is no general law regarding either their formation or regulation. There are indeed several laws, passed in recent years, under which the provincial towns may, if they so desire, have the benefit of Fire Brigades; while many of the more important places, as we have seen, have gained their powers in this respect from Special Acts passed in the interest of the particular town. Where Provincial Brigades have existed previously, they have invariably sprung out of local enterprise or local necessity.

It was the practice of the early fire offices to contribute to the formation of Fire

Brigades in provincial towns [see Fire Brigades, 1794]; but there is now no need to continue it, and it is attended with many drawbacks.

Among the provincial towns having the earliest efficiently constituted Fire Brigades are the following: *Tetbury* (Gloucestershire), estab. 1745; *Glasgow*, 1748; *Ashburton*, 1750; *Grantham*, 1764. The first 3 we believe are paid brigades; the latter volunteer.

Among the towns having efficiently constituted Fire Brigades of the more modern type are *Liverpool*, *Manchester*, *Leeds*, *Glasgow*, *Dublin*, *Norwich*, *Preston*, *Darlington*, *Colchester*, *Barnsby*, *Croydon*, etc.; and prob. other towns are improving in this respect. Several of these towns charge for the use of their brigades in the extinguishment of fires. This subject will be spoken of under Fire Extinguishment, Expenses of.

Regarding the constitution of Fire Brigades, as to whether they should be volunteers or paid, that will be considered under a separate head.

Mr. C. F. T. Young in his work: *Fires, Fire Engines*, etc., pub. 1866, after having paid much attention to the subject of Provincial Fire Brigades, says:

> It is generally admitted that the means in existence in most of the towns throughout Gt. Brit. for the ready and efficient extinguishing of fires are most inadequate—that is to say, in either quantity or quality. As far as having plenty of persons ready and willing to lend a hand on the breaking out of a fire, and use their utmost exertions to save life and property, there is no want; but when it comes to the question of well-trained hands, provided with efficient appliances for the purpose, capable of doing a proper amount of good in the shortest time, the answer is, there are none, or very few, of either.

The question of water supply in many of the provincial towns will be found to be at the root of the efficiency or otherwise of fire extinguishing appliances. [Fire Extinguishment.] [Fire Protection.]

FIRE Brigades, Volunteer.—A good deal of discussion has taken place at various times regarding the relative superiority of paid men and volunteers as firemen. The volunteer system has generally been the most popular; but when reduced to the test of practical experience, it hardly appears to have been either the most effective or the most economic.

The U. S. had been the great field for Volunteer Fire Brigades, but even here the system degenerated into a species of political organization. In 1856 a law was passed by the Legislature of N. Y. authorizing the substitution of paid for voluntary Fire Brigades in that State. The conflict between the new and the old bodies for a time was very sanguinary; but the system of paid men under proper control has almost entirely superseded the voluntary system.

The witnesses examined before the Select Parl. Committees of 1862 and 1867 were divided upon the subject, although the preponderance of feeling was in favour of the paid men.

Sir R. Mayne, Chief Commissioner of Metropolitan Police, said, 1862: "I would rather trust to paid men, whom you have authority to see exercised and trained."

Mr. C. F. T. Young, the great champion of Volunteer Fire Brigades, said in 1867: "My experience of fires has been that there has been a great amount of skill and what I call science on the part of the volunteers. The paid men only do what they are told to do; in fact, you have a different class of men in the volunteers from what you have in the paid men: that is the great distinction I see in it." Mr. Young, in his work, *Fires, Fire Brigades*, etc., 1866, considers that it had been the intention of our Government, as shown in its past legislation, to leave the protection of Lond. and its other great cities to the voluntary system.

Capt. Shaw, Chief of the Lond. Fire Brigade, said, 1867, speaking of the U. S. more particularly, for the last ten years "the tendency has been to do away with Volunteer Brigades as being too expensive, and to adopt the system of paid men"; while speaking of England, he said: "My opinion is that there is no objection to a Volunteer Fire Brigade anywhere, provided they take care not to identify themselves in any way with those men who are really responsible," viz. the regular paid firemen.

We think the real solution of the question may be reduced to this: A Volunteer Fire Brigade is a good deal better than none, and the system is very well suited to small towns and suburban and country districts; but in large towns and cities, where the necessities of the case require trained skill, the volunteer system does not apply.

There were until comparatively recently a number of Volunteer Fire Brigades in Lond. We believe they have been mostly supplanted by the Metropolitan Fire Brigade.

We observe that the Volunteer Fire Brigades from many of the districts round Lond., and also from various provincial towns, hold an ann. competition at the Crystal Palace, where prizes are distributed for efficiency in the management and working of their engines, etc. This is a step entirely in the right direction. [Firemen.]

FIRE Caisse (*French*) [or Fire Casse (*German*)].—This term signified in its orig. application the common chest or fund in those cities and districts wherein the system of municipal fire ins. was in force. The "Caisse" was sustained by the common contribution of all the owners of houses and buildings; and out of it all fire losses were paid. The French have adopted the idea to the fund of an ins. co.—hence the *Caisse General*, one of the leading fire ins. cos. of Paris. [Fire Ins., Municipal.]

FIRE Calls [sometimes called Fire Alarms].—The importance of promptness in calling in the aid of the Fire Brigade, or other fire extinguishing appliances, was recognized at a very early date. The 6 Anne, c. 58, passed in 1707, which provided for the keeping of fire engines by the parishes "within the Bills of Mort.," also provided rewards to be paid to the "engine-keepers" in the order of their arrival with a proper equipment, viz. the first 30*s.*, the second 20*s.*. and the third 10*s.*; while the turncock who first had his water turned on ready for the use of the engines was to be paid 10*s.*

This system led to the engine-keepers and others paying a certain proportion of their fee (usually 1*s.*) to the persons who called them; and thus a regular system of payment for "calls" to fires became estab. The water cos. finally paid a fee of 2*s.* 6*d.* to the first person who gave notice to the turncock in the district. This system of paying for "calls" has not been without its drawbacks. (See 1871.)

Later enactments all recognized the custom of paying rewards for prompt attendance. When the Royal So. for the Protection of Life from Fire instituted its system of Fire Escapes, a scale of fees for prompt call was introduced, varying from 1*s.* to 5*s.* according as the escapes arrived before or after fire engines, and whether lives were saved.

The plan of Fire Calls has gradually developed into a system; and we propose to trace the steps of this development; embracing in our survey the practice of calls in all its aspects.

The old continental method of watchmen on the church towers has gradually given place to the more complete system of the electric telegraph.

1845.—The commissioners for inquiring into the state of large towns and populous districts, in their second report, pub. this year, speak of the system of rewards for discovery of fires and prompt call of the fire engines as not being generally in force elsewhere than the metropolis; adding, "We believe that it has been found most beneficial in stimulating the exertions of firemen, and might be usefully extended."

1849.—The City of Berlin adopted a system of calls by means of the electric telegraph. The police stations were utilized for the purpose. The fact of the fire and of the district in which it occurred were at once made known. Usually within "five minutes" after the call the brigades were in attendance. All this was a matter of great novelty at the time. (See 1861.)

1860.—About this date the City of *Baltimore* was furnished with a complete system of telegraphic appliances for Fire Calls. A wire run through the city, connected with about 90 signal stations. These stations consist of cast-iron boxes on a post, of which the key is kept in the nearest house, and every policeman is also supplied with one. On opening the box a crank is seen, by turning which a bell is rung at the central station, and the number of the box from which the alarm is sent is recorded by an "improved Morse register." The operator immediately communicates the number of the district where the fire has broken out to every engine-house, and engines with fires lighted and men equipped can be started at the instant. Other American cities speedily adopted the same system.

1861.—At the Brit. Asso. Meeting at Manchester, Prof. C. W. Siemens, F.R.S., read a paper: *On a System of Telegraphic Communication adopted in Berlin in Case of Fires.* The system he explained has already been described by us under date 1849. The object of the paper was not so much to describe the process as to urge the necessity for its adoption in other towns. There are few cities in Europe which have not now a system of telegraphic communication for its fire brigades, and none in the U. S.

1862.—It was given in evidence before the Parl. Committee on Fires in the metropolis this year, that the communication between the fire stations in the metropolis was "by messenger always." (Shaw, 524.)

1867.—The system of Calls as between fire station and fire station in Lond. had been improved since 1862 as follows: In the centre of each district a fireman resides. He has a number of stations under his control. He is connected by telegraph with each of these stations, and he is also connected with the central station. When a fire breaks out in a part of his district, the intelligence is sent out to the nearest station of the district. That is conveyed to the fireman, who acts on his discretion, and telegraphs to the central station for further assistance if the fire is likely to be a large one. The chief supt. in that case immediately attends the fire and judges for himself. This system was working well. (Shaw, 5101.)

The "Call-money" in regard to *Fire Escapes*, on the occasion of their being taken over by the Metropolitan Board, was paid as follows: 1. To the person giving the call at a fire escape station, whereby the conductor is enabled to save life (the person "calling" to assist the conductor), 5*s.* 2. If it enables the conductor to arrive before the engine, 2*s.* 6*d.* 3. If after an engine, 1*s.* 6*d.* 4. To the second and third persons assisting the conductor, each 1*s.*

The West Middlesex Water Co. gave it in evidence that during the years named it paid the following sums for calls of turncocks to fires:

1863.	Year ending	Lady-Day,	357	calls at 2*s.* 6*d.*,	£44	12	0
1864.	,,	,,	431	,,	£53	17	0
1865.	,,	,,	577	,,	£72	2	6
1866.	,,	,,	406	,,	£50	15	0
1867.	,,	,,	82	,,	£10	5	0

The adoption of the telegraph we assume had produced the change.

1871.—The system of rewards for Fire Calls, while good in its inception, was pretty certain to lead to some abuses. The following passages from the report of the Lond. Salvage Corps for this year furnishes one most remarkable instance:

> The undue number of fires among hay and straw dealers, in stables, and in similar readily inflammable risks, first had the attention of the Committee in June, 1870, and the subject was then brought under the notice of the Chief Commissioner of Police. In consequence of the continued increase of such cases, the Committee in March and April last brought the matter urgently before the Metropolitan Board of Works (as being charged with the protection of property against fires), and the Board concurred with them in a further application to the police. But wilful fires still occurred. Subsequently, the Committee obtained from the Metropolitan Board particulars of the rewards given for calls; and the several water companies cheerfully afforded the means of inquiring into the rewards for calling their turncocks. In pursuing these investigations, suspicion fell upon Wm. Anthony, and from the large number of instances in which (with varying addresses) he appeared to have given the call for fires from "lights thrown in" and similar external causes, the police were induced to track them out, as well as other doubtful cases where rewards were claimed under names afterwards proved fictitious. As is now well known, Anthony was apprehended and convicted; and it is due to the Superintendent and to the officers of the Corps to record the fact that but for their untiring efforts in assisting and directing the inquiries of the police, the case against this notable incendiary could not have been so successfully completed.
>
> The fires recorded against Wm. Anthony were:—1869, 3; 1870, 48; 1871 (8 months), 74—total, 125; and in many instances the property was found to be uninsured.
>
> It is believed that the water companies are now identifying the addresses of persons to whom they pay rewards for calls; and it is to be hoped that the Metropolitan Board of Works will be enabled to do the same, especially in any future suspicious cases of calls for fire escapes and fire engines.

Anthony was convicted and sentenced to 12 years' penal servitude.

The Telegraphic Call system of Messrs. Gamewell & Co. has been extended through some 60 or 70 cities of the U. S., and the late National Convention of Fire Department Chief Engineers, held at St. Louis, Mo., unanimously adopted the following resolution:

> *Resolved*, That a thorough and efficient system of Telegraphic Fire Alarm, which shall give early and definite information of the existence and locality of a fire, is of primary importance to the Fire Department of every city and town, *and that the automatic system of* Messrs. Gamewell & Co., *of New York, is so complete and satisfactory in every particular, that we earnestly recommend its general introduction.*

The American telegraph system is said to lead to many false alarms; and the following statistics were a few years since collected by Capt. Shaw thereon:

New York,	proportion of false alarms	... ...	57 p.c.
Troy	,, ,,	... ...	52 ,,
San Francisco	,, ,,	... ...	37 ,,
St. Louis	,, ,,	... ...	34 ,,
Montreal	,, ,,	... ...	33 ,,
London	,, ,,	... ...	13 ,,
Liverpool	,, ,,	... ...	10 ,,

In Berlin the telegraph system had led to a great increase in false alarms.

At first sight the question of a false alarm may seem of small moment. But in practice it is not so. Capt. Shaw estimates that in London alone the fire engines travel about 16,000 miles p. ann. under the present system; and each mile so traversed costs 5*s*. If this were doubled by false alarms, the money cost would be £4000 additional; and there would be the even more important fact that the engines might be away from the stations when required for real emergencies [1867, Q. 5107]. We believe that means of overcoming these difficulties will be found.

1872.—A new system of great importance was inaugurated in the U.S. this year—this is a system of House Telegraphs. The plan is to place a small automatic telegraph instrument in every house, by means of which, on simply pressing a stud, an alarm of fire; or of thieves; or of simply requiring a messenger, may be made; there being a separate stud for each of these purposes, terminating in a call at the proper locality; while the instrument records the name of the street, and the number of the house from which the call has been made. The outlay for this service is very small; and probably in a very short time every house will be so fitted, and the small cost involved added to the rent. We can speak from experience of the feeling of security such an appliance in the bedroom, within reach of the bed, imparts. The system is about to be introduced into England.

1873.—Mr. Charles Clyatt, Engineer to the Signals Telegraph Co., Leadenhall Street, proposed a plan for effecting a ready means of communication in case of fire from intermediate points between the various fire brigade stations by means of a system of pneumatic tubes. It appears that the system elaborated by the Signals Telegraph Co. is based upon the principle of fixing at certain intervals intermediate between any two stations iron pillars, the upper portion of which contains air chambers connected with two brass knobs, and by pressing either of these an alarm may be given to each station simultaneously. This communication was referred to the Fire Brigade Committee for consideration and report.

The latest and most complete appliance is that of the "Automatic (Fire) Signal Telegraph Co., of which we shall give an account under FIRE DETECTORS AND INDICATORS.

FIRECOCKS.—Arrangements by which the water-mains are made available for a supply of water to the engines, etc., during fires. The 6 Anne, c. 58 (1707), requires a "mark to be affixed on the front of an house, over against the place where the Firecock lies." They are more usually now called FIREPLUGS.

Various modifications and improvements have been made of late years in this as in most other mechanical appliances. In 1872 there was invented "Beck's Four-way Fire-cock," by means of which water could be delivered to four mains or four fire engines at the same time. In large buildings this may sometimes be a point of considerable importance. [HYDRANTS.]

FIRE COMPANIES.—A designation frequently applied in the U.S. to the Volunteer Fire Brigades, each of which was usually composed of a company of men (political associates frequently) who admitted no allegiance to any organized body in regard to fire extinguishment. [FIRE BRIGADES, VOLUNTEER.]

FIRE-DAMP.—The explosive mixture of light carburetted hydrogen and air found in coal-mines. It is also generated in marshes, bogs, and stagnant pools.—*Brande.*

Fire-damp is produced in some cases by a slow decomposition of the coal itself; in others it is probably the result of the changes in the constitution of the vegetable matter of which the coal itself is formed, which has been confined under great pressure in the interstitial spaces of the coal or rocks immediately in connexion with them. This gas is the constant product of the decomposition of carbonaceous bodies under water: it has hence also been called marsh gas.

This carburetted hydrogen gas does not explode when mixed with air in a proportion much above or below the quantity necessary for complete combustion. With three or four times its volume of air it does not explode at all, with five and a half or six volumes of air it detonates feebly, and with seven or eight most powerfully. When mixed with fourteen volumes of air the mixture is still explosive, but with larger proportions of air the gas only burns about the flame of the taper.—*Ure's Dictionary.*

The deaths from Fire-damp for the 10 years ending 1865 were 2012, or about 20 p.c. of the entire number of violent deaths in connexion with mines.

In 1866, out of a total of 1484 deaths in mines, 651 arose from Fire-damp. [COLLIERIES, EXPLOSIONS IN.]

In 1873 Dr. Charles Kidd announced that an "interesting discovery had been made in America, the birthplace of our chief discoveries as to the reactions of gases, vapours, etc. Blake, of Boston, gives several cases of persons taken apparently dead out of coal-mines restored to life by inhalation of oxygen. This gas seems a perfect antidote to fire-damp; in some cases there was a relapse when the oxygen was discontinued, but on resuming its inhalation the patients were saved. Next to the value of the Davy lamp (he adds) must rank the great efficiency of this gas in the too-often painful scenes in coal-mines, where hitherto nothing was done to restore life, as no antidote was known."

A simple method of extracting fire-damp from coal-mines is said to be in successful use in some parts of *Scotland*, being thought more effective in disposing of the carburetted hydrogen gas than are some of the more elaborate and costly contrivances. According to this arrangement a receiver, containing a siphon pipe, is placed at the top of the pit, and connected to gas-pipes of a sufficient size, say about two or three inches in diameter, and these are carried down the pit and through the workings, branch pipes being attached to the main pipes, with stop-cocks at all necessary points. These branch pipes are inserted in the roof, or any other parts of the workings, where gas or fire-damp is found to accumulate. The receiver at the top of the pit is filled with gas, and a burner attached to the receiver will be lit. By the employment of these simple means, all the gas which may be in the pipes is sucked up through the receiver, the burner of which keeps lighted as long as any gas remains in the pipes. [COLLIERIES, EXPLOSIONS IN.] [MINES, COAL.]

FIRE-DAMP INDICATOR.—An apparatus in which the high rate of diffusion of marsh gas, or fire-damp, is noted for the purpose of detecting its presence in the air of mines. One of these was invented by Mr. George F. Ansell of the Royal Mint, of which a very full account is given in *Ure's Dict. of Arts, Manufactures,* etc.

FIRE DECREES.—By the 18 & 19 Car. II. c. 7 [sometimes called c. 2], 1666—*An Act for erecting a Judicature for Determination of Differences touching Houses burned or demolished by reason of the late Fire which happened in Lond.*—it is recited:

> Whereas the greatest part of the Houses in the Citty of Lond. and some in the suburbs thereof have beene burnt by the dreadfull and dismall fire which happened in Sept. last, many of the tennants under tennants or late occupiers whereof are lyeable unto suites and actions to compell them to repaire and rebuild the same and to pay their rents as if the same had not beene burned, and are not relievable therein in any ordinary course of law and great differences are likely to arise concerning the said repaires and new building of the said houses and payment of rents, which if they should not be determined with all speede and without charge would much obstruct the rebuilding of the said Citty. And for that it is just that every one concerned should beare a proportionable share of the losse according to their severall interests, wherein in respect of the multitude of cases varying in their circumstances noe certaine generall rule can be prescribed. Bee it therefore enacted, etc.

That the Justices of the Courts of King's Bench and Common Pleas and the Barons of the Coife of the Exchequer for the time being or any 3 or more of them sitting at the same time and place might "heare and determine all differences and demands whatsoever" which have arisen or may any way arise between landlords proprietors tennants lessees under tennants or late occupiers of any of the said houses or buildings with their appurtenances etc. touching or concerning the repaireing building or rebuilding of the said houses etc. And the order of the said Court was to be final and subject to "noe appeale or review otherwise than as is hereafter mentioned." The said judges had general power as to ordering surrenders or increasing or diminishing charges on estates, new leases, etc. Such orders to bind, notwithstanding coverture, infancy, etc. The judgments to be signed and recorded "in a booke or bookes of parchment to be provided for that purpose," which were to be placed in the custody "of the Lord Maior and Aldermen of the Citty of London for the time being to be kepte with the Records of the said Citty, and to remaine as a perpetuall standing record, unto which all persons concerned or which shall be concerned shall or may repair to view the same, and thereout to take copies of all such judgments and determinations as shall relate to him, her, and them."

Accordingly among the records of the Corp. of Lond. are 9 parchment vols., wherein are recorded the orders, judgments, and decrees made by the authority aforesaid. The Court began to sit at Westminster 8th May, 1667, and continued by several prorogations to the 18th Sept.; and then continued to the 8th Feb. following, and then prorogued to the 10th Oct. 1668. Every decree is signed by the Judges, and the books are in the most perfect preservation.

There is also in one vol.: *Decrees of the Court of Judicature Erected by Act of Parl. to Determine Differences Touching Houses Burnt and Demolished by the late Dreadful Fire in Southwark.* From 8th June to 17th July, 1677. The Court was held in the Guildhall, the Lord Mayor, Aldermen, and Justices of the Courts being present, by whom the decrees are signed.

FIRE DEFENCE CO. LIM.—This was the title of a new venture propounded 1870 for the purpose of introducing the fire watch, the fire gun, the smoke breather, and the fire escape, invented by Mr. John Scott, of Oxford Street, London. Mr. Scott claims for these inventions great merit, but we have heard nothing further concerning them.

FIRE DEPARTMENT.—This designation in the United States corresponds to our FIRE BRIGADES; but inasmuch as many of the American cities require, from their construction, much more extended appliances in regard to protection from fire than our own, the providing this protection ordinarily devolves upon a department of the municipal government—hence "Fire Department."

FIRE DETECTORS AND INDICATORS.—Under this head we propose to speak of a series of inventions, mostly of modern origin, which seem destined to play an important part in regard to FIRE PROTECTION. They may be regarded as supplementary to what we have said under FIRE CALLS, and some of them have a direct bearing upon FIRE EXTINGUISHMENT.

1863.—An invention by Mr. Geo. Hawkesley was exhibited at the So. of Arts this year, the object of which was to sound an alarm, or open a ventilator, when the temperature of a room increased beyond the point at which the apparatus was set. The apparatus consisted of strips of metal capable of expanding freely with heat, attached to levers, in such a manner as to produce automatic action at the point desired.

1864-5.—It was part of the plan of Mr. Stewart Harrison's Self-Acting Water Extinguishment of Fires that the flow of water, occasioned by the melting of a fusible plug, should give the alarm at any distance required, and so play the part of a Detector as well as Extinguisher.

1865.—Mr. Sax completed an Electric Fire Indicator. In a disc was placed a metallic thermometer, which could be set at any temperature desired, and when that degree of heat became exceeded, it would make the contact, and so completing the electric circuit, would cause a bell to ring violently so long as the high temperature continued. The call-bell or alarm could be placed at any spot desired. The fire button could also be made to act on a reduction of temperature below any given point; so that, if placed in a greenhouse or other place requiring a certain degree of heat, notice would be given.

1869.—Some interesting experiments were recently witnessed in front of No. 60, Fulton St., N. Y., illustrating the American Fire Detector. Instruments no larger than marine clocks were placed near the ceiling on each floor, connected by wires with a small box on the outside of the building. The instruments were so sensitive that the burning of a newspaper would ring the bell in the box outside, and a tin plate bearing the inscription "third floor," or any number corresponding with the floor on which the paper was burning, appeared suspended from the box.

The editor of the *Ins. Monitor* quickly perceived the importance of this invention, and appended to his account of it the following note: "This is another step in the interests of prevention, and one which our fire underwriters should examine, and, if found worthy, encourage."

1870.—A new electric apparatus was brought into public notice under the auspices of Mr. B. S. Williams, of Holloway, which was believed to be an advance upon everything of the kind hitherto. It was called the "Victoria Electric Thermometer," though it is less a thermometer, properly speaking, than a "thermostat." It consists of a horizontal coiled tube filled on the upper side with spirit and on the under side with quicksilver, the whole delicately poised on central pivots. By means of a sliding bar it can be set to give warnings at any required temperature. When the temperature for which the machine is set actually occurs, the tube is thrown out of its true horizontal position, and an electric current is established, and the warning is given by the ringing of bells or the disclosure of such words as "frost," "fire," "hot," "cold," etc., etc., as the apparatus may be adapted to in the first instance. The thermostat, which opens a ventilator or closes a door, by the expansion of a bar of metal or the moving of a body of quicksilver, is apt to fail, because charged with too severe a task. All that the "Victoria" apparatus professes to do, we are told, is to give warning, and this it accomplishes promptly and decisively, the disturbance of a balance by the combined movements of spirit and quicksilver affording a sufficient impetus for the accomplishment of the end in view. A proper battery, wires, bells, and so forth, are, of course, required. The merit of the invention appears to consist in the delicacy and certainty of the motive power. If we suppose it set to give warning of a temperature of 90 deg., it is asserted that it will remain quiescent for any number of years until the temperature reaches 90 deg., and then the bells will ring continuously until the instrument is readjusted. We name 90 deg. as an example of the application of the invention as a Fire Alarm, because at that point a warehouse, for example, might be in danger, and the person responsible for its keeping could be advised of the danger at a distance of a mile or two, provided only the needful communication were established by means of the proper wires. But it is said to be equally well adapted to give notice of frost, or of the boiling of water, or whatever else in connexion with changes of temperature we may wish to be warned of in time to avert a catastrophe.

1873.—Prof. Grechi, of Lima, produced a detector very inexpensive in construction, and adaptable to all kinds of substances from which any danger might be feared from over-heat. It was tested at the International Exhibition, South Kensington. A number of small tin boxes connected with a central battery, and bells, or lamps, were distributed in various parts of the building: some suspended in the air, some submerged in liquids, and some in grains or other substances. As soon as an elevated degree of temperature was produced, either in the room or in the receptacles containing the substances above mentioned, a loud sound of a bell was heard; a number indicating the portion of the building where the excess of heat was produced was shown on a dial frame; and a lamp was lit by means of a chemico-mechanical contrivance. The invention was considered a success. It was on inspection at Messrs. Negretti & Zambra's, Holborn Circus.

The Tunnicliffe F. Detector patented in the U.S. consists of an apparatus about 3 in. long and 1¼ in. in diameter. It is fastened by a screw to the ceiling of the room. The principle upon which its action is based is that of the ignition of a chemically prepared fusee by the heat of the room; this explodes a powder cartridge. The discharge pressing upon the flattened end of a pivotted iron rod, causes it to start a fire alarm outside the window by means of a wire attached; while the explosion of the cartridge gives the alarm within.

The editor of the *Chronicle*, of N.Y., reviewing the preceding, says: "The same result is more surely and simply reached by another invention which consists of a glass bulb inserted in the ceiling, and filled with quicksilver, the expansion of which by heat at a given temperature completes the circuit, and rings an alarm in any part of a house, or at a police station, or in both places if desired."

1874.- The Lymington F. Detector has been fitted up in the block belonging to the proprietors of the *Glasgow Herald*. The detector consists of a small disc, containing an arrangement on the principle of an ordinary thermometer. The rising of the mercury in the tube, caused by the heat, completes an electric circuit and rings a loud gong. The detector can be set to sound the alarm at any temperature wished, and an "indicator" shows the particular part of the building in which the heat has occurred. The apparatus appears to be most simple. The bell continues to ring so long as the excessive heat exists, and it needs no winding up.

A simple and effective means of detecting a fire and its precise locality immediately upon its outbreak has been devised by Mr. John Lewthwaite, the operation of which depends upon the destruction of cohesion in certain substances when exposed to temperatures higher than those met with in houses and factories under ordinary circumstances. The apparatus consists of a short strip of yielding material—gutta-percha being the substance used--which is held at each end by a wire placed along the ceiling line in any apartment. One end of the wire is fixed, while the other is led to an alarm bell, which may be placed anywhere within hearing. The alarum works either by means of a falling weight or by clockwork, the wire in either case being held taut, so that the alarum cannot go off. This is the normal condition of the apparatus, but directly the gutta-percha becomes softened by heat—which it does at 110 degrees Fah.—it rapidly elongates, releases the weight or train of clockwork, starts the alarum, and indicates danger. This apparatus can be fitted in any number of rooms and connected to the same alarum, and no matter in which room the fire broke out it would be notified directly the temperature reached 110 degrees. Moreover, the room in which the fire occurred would also at the same time be notified by an indicator attached to the alarum, so that no time would be lost in searching for the seat of the fire. The same principle could be carried out in ships, where its adoption might possibly prove more valuable than on land, the indicator being fixed in the captain's cabin. It is also arranged to be fitted in connexion with an electric battery, and in establishments where electrical bells are already in use the cost of the indicator—in all cases moderate—would be simply nominal.

The Thermo-Electric Alarm, which was orig. designed to indicate the rise of temperature

in bearings for shafts, has more recently been converted into a F. Detector. The following is a condensed account of it :—It resembles a common thermometer, except that it has a wire secured at top and bottom. The wire at the bottom passes through the bulb and touches the mercury. The other wire enters the glass at the top and extends part way down the inside. Each of these wires is connected with a small open circuit having a battery and an electric bell. When this connexion is made and the battery in order, the glass may register (say) 40 deg. The upper wire hangs down in the glass, say to 85 deg. It is easy to see that the circuit is not broken, by the space between the top of the column of mercury and the bottom of the wire. Place the hand on the bulb and the mercury rises. The instant it touches 85 deg., it melts the wire, and the bell indicates that the circuit is closed. Take the hand away and the column of mercury sinks, the circuit is broken and the bell stops. It is observable that when the thermometer is made, the upper wire may be adjusted to any figure on the scale. To indicate the presence of fire, it could be set at 100 deg. or upwards. In the case of hotels, a glass in every room, each with its wire circuit, might ring an alarm bell in the office the instant the temperature rose above a fixed height. To indicate the particular room a common electric annunciator might be attached to the system of circuits, and the clerk or watchman would be instantly informed of the exact position of the danger. By fixing the glasses at a comparatively low figure, say 90 deg., they would serve a double purpose, show if the room was too warm from over-heating or in danger from fire.

1875.—The most complete of all the appliances of which we have any knowledge is one which is now in course of being adopted in many large buildings in N.Y., at the instance of the Fire Ins. Patrol of that city. It makes a fire, breaking out in any part of a building, reveal its existence and locality by an automatic alarm, which it despatches by telegraph to the nearest station of the Fire Patrol. As the signal indicates the street, the number of the street, and even the floor of the building, in which the fire is rising, the company required is enabled to proceed directly to the right spot in time to prevent the spread of the flames, and to extinguish them before they have gained much headway. We take the following account of it from the N.Y. *Ins. Times*, Nov. 1874:

The *Automatic Alarm*, as placed in a building, is seen to consist in part of small brass tubes, each containing a compound metallic coil, composed of two metals of unequal expansive and contracting power. These tubes are affixed to the ceiling at intervals of 25 feet, and are called thermostats. The action of heat causes the coil of the Thermostat to expand till it touches an adjustible screw, which projects through the side of the tube. A connexion is thus formed with a galvanic battery through the wires by which the Thermostat communicates with a larger instrument called the Transmitter, one of which is placed in every floor which the Automatic Alarm is to guard. The electric current operating through a magnet in connexion with the neat clock-like mechanism of the Transmitter, conveys a signal to the Patrol station. The slow strokes of the bell indicate the street and number, and the quick ones which immediately follow them denote the floor of the building from which the automatic signal proceeds. The coil in the Thermostat is so sensitive to heat that it can be adapted to signal at only 10 to 15 degrees higher than the normal temperature of the room, so that being placed in the ceiling, to which the hot air ascends, the atmosphere in the apartment no sooner becomes heated, either by smouldering or rapidly spreading flames, than the alarm, with every necessary particular, is despatched with the celerity of lightning to the Fire Patrol.

For this ingenious scientific invention the world is under perpetual obligation to Mr. W. B. Watkins, who patented it in 1870, and since that date has made and patented several improvements upon the original contrivance.

It is announced that the National Board of F. Underwriters have passed a resolution to make a reduction in the rates of all property protected by this Detector.

FIRE Engines (generally).—The hist. of fire engines, so closely associated with fire protection, and therefore with fire ins., is of considerable interest. A fire engine is a pump, a forcing pump, in which water is subjected to a pressure sufficiently great to raise it to any given height required. In former times these mechanical contrivances were usually termed *Water Engines*.

The invention of pumps is almost by common consent dated back some 2000 years, the inventor being Ctesibius, an engineer in the city of Alexandria, who lived in the 165th Olympiad, or about 120 years before the commencement of the Christian era. This was in the time of Ptolemy Philadelphus and Ptolemy Euergetes I.

The invention of Ctesibius was at its origin designated "Spiritalia." At a later date pumps in general were designated *machinæ Ctesibicæ*. There seems good reason to believe that this orig. pump bore a very strong resemblance to the manual fire engine of later times. Hero of Alexandria, a pupil of the inventor, described the invention as having metal cylinders, metallic pistons, spindle valves, with guards to prevent their opening too far ; a goose neck, formed by a kind of swivel-joint—something like a union or coupling screw ; the application of an air-vessel ; 2 pumps forcing the water through 1 pipe, and 1 lever to work both pumps. All these are features more or less essential to fire engines in the present day, and some of which have been claimed as new inventions in later times ; but other mechanical appliances are requisite to a fire engine as now understood.

Mr. Beckman, in his *Hist. of Inventions*, thinks it highly prob. that Ctesibius had an idea of converting his pump into a fire engine.

The next mention we find of anything approaching to the description of a fire engine is in the 19th book of Pliny the elder, who died A.D. 79. He there speaks of water being forced up by pumps and such like "going with the strength of the wind inclosed."

That the Romans were familiar with the use of the fire engine appears more clearly from an application of Pliny the younger, who, being governor of the newly-acquired province of Bithynia, applied to the Emperor Trajan, prob. about A.D. 100, for authority to estab. a fire brigade, and among the articles he enumerates as necessary for the purpose is a "Sipho." This has been interpreted variously, as meaning aqueducts, canals, and pipes for distributing water through the city. But a little investigation appears to furnish the true meaning. In the fragment of a work by Apollodorus, the architect of Trajan's Bridge and other famous works in Rome, its readers are instructed that *when a fire occurs in the upper part of a house, and the sipho is not at hand*, to take leather bags and fill them with water, connecting long pipes with them; and then, by compressing the bags, the water will be thrown to a certain height. It is clear, therefore, that the "sipho" was a machine by which water might be easily projected to a considerable height, and that it was used to extinguish fires.

Ulpian, an eminent Roman citizen, who was murdered in A.D. 228, has made use of a passage which is held to prove that there were fire engines in Rome in his time. Where he enumerates those things which ought to belong to a house when sold, he mentions, besides other articles for extinguishing fires. *siphones*. But as every house could not have a fire engine as we understand the term, and as on the rebuilding of the city every citizen had been required to keep in his house a machine for extinguishing fires, it appears to us that the term, as here employed, meant only small hand engines, such as at a later period became general in Europe. They were indeed frequently but large syringes.

Hesychius, the grammarian of Alexandria, and Isidorus of Miletus, who flourished towards the close of the 4th century A.D., show that the word *sipho* was applied to a fire engine; and the term was understood as meaning such in the 4th century. It is also stated by the latter that such engines were used in the East for the purpose of extinguishing fires, and they were common in Constantinople for this purpose, where they were known by the term *sipho*. The Latin term employed by him in describing the action of the "sipho" is too plain to be mistaken; it is *jaculandus*—throwing or casting the water—the same term as is applied to the hurling of darts or javelins, and casting of stones, etc., by the ballista or catapult by the ancient writers.—*Young*.

In the East in early days engines were not only used to extinguish fires, but to produce them. Greek-fire was known as early as 678, and its use was continued down to 1291. It was a liquid, and was employed in many different ways, but chiefly on board of ship, being thrown by machines, specially constructed, on to the ships of the enemy. These machines by ancient writers are called "spouting-engines;" and it appears they were capable of projecting the fire to a great distance.

Having thus traced the early history of Fire Engines so far as the materials at command admit, we shall now find it convenient to note their later development under separate heads, as Fire Engines, Hand; Fire Engines, Manual; Fire Engines, Manual and Steam (Floating); Fire Engines, Steam; Fire Engines, Steam, Self-propelling.

FIRE Engines, Hand.—Hand Engines, as used for extinguishing fires, have assumed various shapes and forms at various periods; and the opinions regarding their use have changed almost as much as the instrument. We have seen what we regard as direct evidence that syringes for use in extinguishing fires were used in ancient Rome. Mr. Young, in his *Hist. of Fires, Fire Engines*, etc. (1866), speaks of these as of most ancient origin, "dating from a period long antecedent to the time of Ctesibius." He adds: "The syringe is the only kind of pump known in Asia (*China* excepted), where it has doubtless been known and used from a very ancient period."

From Rome we trace the use of the fire syringe through various continental cities, until we find several of them "kept in a rack in the vestry-room of St. Dionis Back-church, Fenchurch Street," and of which we shall give a description in the present art.

1548.—In Rivius's German translation of Vitruvius, made this year, there is a sketch or engraving of the inside of the barber's shop kept by the father of Ctesibius, and here is shown a syringe exactly similar in form to that we shall mention under date 1564.

1564.—In a work of Rodolphus Agricola, pub. this year, and now very rarely met with, *De re Metallica*, there is a drawing showing a complete set of fire extinguishing apparatus, conspicuous among which is a long syringe, which we are told was made of brass; and the author designates it *siphuncalus orichalceus cujus uses est in incendis*, leaving no possibility for doubt about its use.

1590.—In a book on Practical Geometry and Surveying, by Cyprian Lucar, gentleman, "a treatise named *Lucarsolan*, divided into fower bookes," London, 4to., occurs the following: " . . I will . . set out before your eyes a type of a squirt which hath been devised to cast much water upon a burning house, wishing a little squirt and plenty of water to be alwaies in a readinesse where fire may do harme, for this kinde of squirt may be made to holde an hoggeshed of water, or if you will a greater quantity thereof, and may be so placed on his frame, that with ease and a smal strength, it shall be mounted, imbased, or turned to any one side right against any fixed marke, and made to squirt out his water with great violence upon the fire that is to be quenched."

Prof. De Morgan regarded the invention as Lucar's own. Mr. Young, in his *Fires, Fire Engines*, etc. (1866), gives a drawing of the machine taken from Besson's *Théâtre des Instruments*, and says: "It is a curious fact that no attempt was made after this proof of what could be done to improve the old squirting engines, or increase their power of projection; but nearly 100 years elapsed before any improvement was made, and then only by fresh engines being introduced a second time from Germany."

1600.—Mr. Young is of opinion that it was "not until the close of the sixteenth century that 'hand-squirts,' as they were termed, were introduced into Lond." We cannot trace them earlier. The following is a description of these instruments: They were made of brass, and had a capacity of about two quarts of water; the hole in the nozzle for the passage of the water was half an inch in diameter. The method of using them was as follows: two men, one on each side of the squirt, took hold of the handles fastened to the side with one hand, and the nozzle with the other, and a third took hold of the handle at the end of the piston-rod, drawing it up or out, whilst the nozzle was held in the water contained in a bole or vessel close by; the bearers then held it up, pointing the nozzle towards the burning premises, whilst he at the handle forced in the piston, driving the water out with a strength and velocity proportionate to the power applied, the attention and care of the bearers being directed to secure as much of the water as possible reaching the burning materials.

1634.—John Bate pub.: *Mysteries of Nature and Art, in Fowre Severall Parts, Concerning* (1) *Water Works*, (2) *Fire Works*, etc., etc., wherein is an account of "divers squirts and petty engines to be drawn upon wheeles from place to place for to quench fier among buildings, the use whereof hath been found very commodious and profitable in cities and great townes." Here we have something getting beyond the ordinary hand engines of that period, and probably more resembling the modern hand engine. He says that sometimes these engines were worked by two men.

The writer of an able art. which appeared in the *Railway News* in 1865 said: "Many years ago there was to be seen in the engine-house of a church in Fenchurch Street an ancient fire annihilator. It was not much unlike an inflated Scotch bagpipe. When required it was filled with water, and tied round the waist of a person acting as fireman. It had a pipe attached to it, and when in use the fireman had to squeeze it with both arms, when the water would be forced out in a small jet." Dean Swift's description of the mode of extinguishing a fire in Lilliput, as given in his "Gulliver's Travels," may be regarded as a satire on this machine. May we suggest to the Board of Works that a collection of the early appliances for F. extinguishment in Lond. would be alike interesting and instructive! The chief office of the F. Brigade would be an appropriate place for it.

1707.—By the 6 Anne, c. 58—*An Act for the better preventing mischiefs that may happen by fire*—every parish within the B. of Mort. was required to keep (*inter alia*) "1 hand engine." [FIRE PREVENTION.]

1720.—Leupold, a maker of fire engines in Germany, is reported to have been the first person who introduced the air-chamber into them in modern times. He is said to have made a hand engine which only weighed 16lbs., occupied a very small space, had 1 cylinder, and was contained in a strong closed copper box well soldered up. A man could by their means project a continuous stream of water to the height of 20 or 30 feet. It was in 1720 that his account of them appeared, but he is believed to have manufactured them at a much earlier date.

In consequence of the perfection which what is now termed the manual fire engine had by this time attained, the use of hand engines passed gradually out of sight, and remained so for nearly a century. In some measure the inventions which we have spoken of under FIRE ANNIHILATORS took their place.

1807.—Mr. Hornblower brought out a small portable fire engine, which stood on 14in. square, and was 2ft. high. It could be carried with ease from one part of the house to another, but it was an effective machine.

1820.—Mr. Michael Rough proposed to furnish every house with a wheeled machine, capable of containing 10 gallons. These to be kept full of water after sunset, ready for any emergency that might arise.

1838.—Messrs. Bramah and Robinson constructed the "Swiss portable engine," which could be carried on the back of one man.

1844.—The application of an air-vessel and valves to the syringe, by which it was converted into an efficient hand pump, had been made before this date by Mr. Wm. Baddeley; and he made many later improvements.

Mr. Braidwood this year made a trial of the old fire syringe at St. Dionis Backchurch, an account of which trial will be found in the *Mechanic's Mag.* for this year.

The re-introduction of the use of hand engines at fires dates back to within the last quarter of a century. Mr. Braidwood did not in the earlier days of the Lond. F. Brigade regard their use with favour; but he subsequently changed his views—probably very much on account of the delays and difficulties of getting his manual engines near to the seat of fire when it occurred in courts, alleys, etc., with narrow entrances, of which there are so many in the metropolis.

1848.—Mr. Braidwood had a hand engine specially constructed for himself by Messrs. Shand & Mason.

1851.—Mr. Wm. Baddeley exhibited at the Great Exhibition this year a number of small pumps called "fire syringes," which were calculated to be of great service in the extinguishment of fires in bedrooms and dwelling-houses generally.

1856.—Mr. Braidwood, in his paper on "Fires," read before the So. of Arts, said: "For some years past a hand pump has been carried with each engine. They have been found of the greatest service in keeping doors, windows, etc., cool. They throw from 6 to 8 gallons per minute, to a height of from 30 to 40 feet, and can be used in any position. The idea of the hand pumps was taken from the old-fashioned squirt, or "hand engine."

1859.—Capt. Fowke patented a fire engine which dispensed with the cistern, and could therefore be conveyed rapidly on account of its light weight. It has a pair of single action force pumps, fitted with metal valves, a suction and delivering air-vessel, hose to draw water into the pumps, and levers to force it out. It may be drawn by hand, or connected with a carriage drawn by a horse.

1860.—Mr. Wm. Roberts patented a small portable engine, to be carried and worked with a hose reel. It was very light and powerful, and from the mode it was carried on the reel became known as the "Gig Engine."

1866.—About this date an incident occurred which gave a great impetus to the use of hand engines in private houses. A fire broke out at the Earl of Essex's house, Cassiobury, Watford, and here is what his Lordship wrote to the *Times:*

> Last night, just as I was going to bed, I was startled by the most fearful of all cries, "Fire, fire!" I soon learned that a fire was raging in a large two-windowed, unoccupied bedroom. How caused is to us all a great mystery. It is my custom to keep one of the small engines on each floor. In 2 minutes I was in the room with one of them. It was like a furnace. The curtains, shutters, casements, and cornices of both windows were burning and crackling from floor to ceiling. I was quite alone at the moment, yet before assistance arrived (most of the servants having gone to bed) I had completely subdued the fire of 1 window without exhausting the engine, and when assistance and more water did arrive we very soon extinguished the other. So fierce was the fire that the lead of the casements was melted, and the casements themselves were burnt off their hinges. I will only add that, by God's mercy, the house was saved by this small engine. Had it not been at hand and in order, most assuredly Cassiobury would be now a heap of ruins.

This circumstance not only created a great demand for, but led to a very decided improvement in hand engines. One in a very convenient form has been arranged by Messrs. Owens, of Whitefriars Street, Fleet Street, Lond., with the intention of keeping it solely as a portable house engine in case of fire. It resembles a common garden engine in general appearance, but is on smaller wheels, and consequently takes up less space in proportion to its cubital contents. The pump is fitted with an air-chamber, so that a constant stream is kept up, capable of being forced upwards of 50ft. horizontally and 35ft. perpendicularly, and this with very slight work to the hand, owing to the leverage exerted and the efficiency of the mechanism used. All country houses should be provided with 1 on each floor, or, at all events, 1 on the principal corridor. The price of the larger size is £6 5*s.*; of the smaller £3 12*s.*

We do not mention this particular engine in any invidious sense. We know it to be efficient; that is the main point. In many cases the modern fire annihilator is preferred. In the U.S. Beasley's Improved Gardner Fire Extinguishers are much in use, and appear very effective.

1872.—Capt. Shaw, in his *Fire Surveys*, says: "Fire pumps, or, as they are more commonly called, hand pumps, should be provided for houses and offices containing valuable property. These little machines are very simple, and can be worked by any one. Being rather ornamental, they can be kept in prominent places in the corridors or passages, and will be found peculiarly useful for stopping a fire at an early stage."

FIRE ENGINES, MANUAL.—These are machines worked by hand power, but requiring the aid of a number of men, as distinguished from HAND ENGINES, which as a rule are suitable to be worked by one person only.

Curious as it may seem, the precise date and circumstances of the re-invention of these important machines—if re-invention it was—cannot be traced with any exact precision. Mr. C. F. T. Young, whose work, *Fires, Fire Engines*, etc. (1866), brings together a large store of knowledge upon the subject, says: "Fire engines, their use and manufacture, seem to have been altogether forgotten during the dark ages; and squirts or portable syringes appear to have been the only contrivances in use for throwing water on fires, except buckets."

In *China* very efficient manual fire engines, similar to those in Europe, are in use, and have been known from a remote period.

1518.—Von Stetten discovered in the building accounts of the City of Augsburg that fire engines are first mentioned this year. They are called *instruments for fires, water syringes*, useful at fires. They were made by a goldsmith at Friedburg named Anthony Blatner, who the same year became a citizen of Augsburg. From the account added—

that the wheels and levers were constructed by a wheelwright, and from the greatness of the expense—there is reason to conclude that these were not small simple hand engines, but large and complex machines.—*Beckmann.*

1582.—The waterworks at Lond. Bridge which were completed this year, and from which Stow says water was thrown over St. Magnus' Steeple, simply gained this power, we assume, from water pumped up into tanks. [FIRE EXTINGUISHMENT.]

1615.—Decaus, in his *Forcible Movements*, pub. this year, describes and illustrates a German engine of the period, which he calls "a rare and necessary engin, by which you may give greate reliefe to houses that are on fire. This engin is much practised in Germany, and it hath been seen what great and ready help it may bring; for although the fire be forty foot high, the said engin shall there cast its water by help of four or five men lifting up and putting down a long handle in form of a lever where the handle of the pump is fastened. The said pump is easily understood: there are two suckers within it, one below to open when the handle is lifted up, and to shut when it is put down, and another to open to let out the water; and at the end of the said engin there is a man which holds the copper pipe, turning it to and again to the place where the fire shall bee."

1632.—Among the various patents granted by Charles I. was one this year to Thos. Grent, a physician, for (*inter alia*) "a water-bowe" for the more speedy preservation of houses on land and ships at sea from fire.

1633.—We find it recorded that in this year fire engines were introduced into Lond., and three of them were used at a fire at London Bridge. It was said of them that they were "such excellent things that nothing that was ever devised could do so much good, yet none of these did prosper, for they were all broken!"

It is regarded as prob. that these engines were introduced from *Holland.* They were described in *Phil. Trans.* (vol. ii. 1675).

1634.—In a book pub. this year, called *Mysteries of Nature and Art*, by J. B. [John Bate], is the following: "THE DESCRIPTION OF AN ENGINE TO FORCE WATER UP TO A HIGH PLACE, VERY USEFUL FOR TO QUENCH FIRE AMONGST BUILDINGS. Let there be a brasse barrell provided, having two succurs at the bottom of it; let it also have a good large pipe going up on one side of it, with a succur right unto the top of it, and above the succur a hollow round ball having a pipe at the top of it, to screw another upon it to direct the water to any place. Then fit a forcer into the barrell, with a handle fastened unto the top. At the upper end of the forcer drive a strong screw, and at the lower end a screw-nut. At the bottom of the barrell fasten a screw, and at the barre that goeth crosse the top of the barrell let there be another screw-nut. Put them all in order, and fasten the whole to a good strong frame, that it may be steady, and it is done. When you use it, either place it in the water or over a kennel, and drive the water up to it, and by moving the handle to and fro, it will cast the water with mighty force up to any place you may direct."

1637.—The following curious account of the services of some of those early engines is taken from the Registry Books of the Privy Council, and is in the form of a letter addressed by King Charles I. to the Lord Mayor and Aldermen of the City of Lond.:

"Provisions of Engins in London for Accidentes of Fier. At Whytehall the 7th of
" March, 1637, a letter to the Lord Mayor and Aldermen of London:

"Whereas, wee have had good informacion otherwise of the excellent use to bee made
" in accidentes of fier of the new Engins for spowting of water; and that in the late fier
" which happened neare Arundell Howse the good use thereof did manifestly appeare,
" although there was none of the said Engins brought untill it was late, by reason (as is
" informed) that there was none of the said Engins in the Parishes neare thereaboutes.
" Wee have thought fitt to take notice to your Lordshipp, &c., of the great scarcity of
" the said Engins, considering the great use to bee made of them, and earnestly to recom-
" mend unto you that there may a frequent provision bee made of them, so as that upon
" all occasions, they may bee neare and ready at hand. Yet to avoyd any burthen upon
" the Citty, more than necessary, we conceave that more of the lesser parishes may joyne
" together in providing of an Engin; but that the great Parishes should provide them-
" selves, as wee intend to give direccon for the Parishes out of the Cittyes jurisdiccion,
" every one to make provission. And uppon this occasion, our very good Lord the Earle
" Marshall having informed us of the care and dilligence used by Mr. Sheriffe Atkins
" who was pressent there in person, and did very good service, we have thought fitt to
" pray your Lordship, &c. to give himm thankes for the same. And so we bid, &c.
" Charles R."

It will be observed that this was about 30 years before the Great Fire of London.

1650.—It would appear probable that the Marquis of Worcester was one of the first inventors of the fire engine. We find without date, but we think prob. about this period, a broad-sheet commencing:

Most Gracious Sovereign, the same individual definition of my water-work which I formerly presumed to put into your Royal hands, I again adventure to present to your Majesty; praying your belief of it, as your Majesty shall find it true by comparing it with the real effect, which if found punctually agreeing, vouchsafe not then to be apt hereafter to lend a believing ear to such persons, as malice causeth to detract from, or ignorance to slight what shall (though never so seemingly strange) be averr'd by me, who will never be convinced of a falsehood in word or deed towards your sacred

Majesty; before whom I shall ever speak as in the presence of Almighty God, whose Viceregent on earth I deem you; and to your Majesty's transcendent judgment I submit all, and will presume to subscribe myself, Sir, your sacred Majesties faithfully-devoted and passionately-affected useful, if cherished subject and servant, WORCESTER.

Then comes a description of the engine, done in the extravagant phraseology of the period:—

"A stupendious or a water-commanding engine, boundless for height; or quantity, requiring no external, nor even additional help, or force to be set, or continued, in motion, but what intrinsecally is afforded from its own operation, nor yet the twentieth part thereof: and the Engine consisteth of the following particulars:—A perfect counterpoise for what quantity soever of water.—A perfect countervail for what height soever it is to be brought unto.—A *Primum Mobile* commanding both height and quantity, regulatorwise.—A Vicegerent or countervail supplying the place and performing the full force of man, wind, beast, or mill.—A helm or stern, with bitt and reins, wherewith any child may guide, order, and controul the whole operation.—A particular magazine for water according to the intended quantity or height of water.—An aquaduct capable of any intended quantity or height of water.—A place for the original fountain or even river to run into and naturally of its own accord incorporate itself with the rising water, and at the very bottom of the same aquaduct though never so big or high.—By divine permission and heavenly inspiration, this is my stupendious Water-commanding Engine, boundless for height and quantity."

Then follow some poetic effusions; and then the conclusion:—"To God alone be all praise, honour, and glory, for ever and ever, Amen.—Worcester." In these last words the King was overlooked, notwithstanding the preceding panegyric.

1656.—John Evelyn says in his *Diary*, "Greatorix, the mathematical-instrument maker, showed me his excellent invention to quench fire" (vol. i. p. 314).

1657.—In this year, says Beckmann, the well-known Jesuit, Caspar Schott, was struck with admiration on seeing at Nuremberg a F. engine which had been made there by John Hautsch. It stood on a sledge 10 ft. long and 4 ft. broad. The water-cistern was 8 ft. in length, 4 in height, and 2 in width. It was moved by 28 men, and forced a stream of water an inch in diameter to the height of 80 feet; consequently over the houses. The machine was drawn by two horses. Hautsch distributed throughout Germany an engraving of it, with an offer of constructing similar ones at a moderate price, and teaching the use of them; but he refused to show the internal construction of it to Schott, who however readily conjectured it. . . . Schott adds that this was not a new invention, as there were such engines in other towns; and he himself forty years before, and consequently in 1617, had seen one, but much smaller, in his native city, Würzburg. George Hautsch, son of the above artist, constructed similar engines, and perhaps with improvements, for Wagenseil and others have ascribed to him the invention.

1663.—A fire engine is said to have been constructed by John Van der Heyden at this date, which had improvements placing it in advance of any previously constructed. We do not find any authentic account of it.

1666.—In an Official Rep. or Account of the Great Fire of Lond. this year, dated Whitehall, Sept. 8th, it is remarked, "This lamentable fire in a short time became too big to be managed by any engines."

None of the F. engines of this period, says Mr. Young, had either an air-vessel or chamber, nor flexible hose. They were in fact single acting squirts mounted on wheels, their powers and advantages being of a very limited nature. Mr. Beckmann furnishes material to complete the description: "They consisted merely of a sucking-pump, which projected water only in spurts and with continual interruption. Such machines, on each movement of the lever, experience a stoppage, during which no water is thrown out; and because the pipe is fixed, it cannot convey water to remote places; though it may reach a fire at no great distance, where there are doors and windows to afford it a passage. At the same time the workmen are exposed to danger from the falling of the houses on fire, and must remove from them to a greater distance."

1672.—The invention of leather hose is the next great event in the hist. of F. Engines; and the merit belongs to two Dutchmen of the name of Jan van der Heide, who were inspectors of the apparatus for extinguishing fires at Amsterdam. The first experiments made with it took place this year, and were attended with so much success that at a fire next year the old engines were used for the last time. In 1677 the inventors obtained the exclusive privilege of making these engines for 25 years. In 1682 the new engines were distributed throughout the entire city. In 1695 there were in Amsterdam 60 of these engines, the nearest six of which were to be employed at every fire. In the course of a few years they were common in all the towns of the Netherlands.

[After the introduction of these engines into Eng. improvements were made in them from time to time, by Dickenson, Simpkin, Phillips, Furst, Newsham, Rowntree; and more recently by Merryweather, Baddeley, and Shand. Some of these improvements we shall note as we proceed.]

One of the main advantages of the introduction of flexible hose to F. engines was that the engines could be placed much further away from the fire, and thus their safety could be in some measure secured. In the accounts of fires at which the earlier constructed engines were present we constantly read of the engines being burned, or disabled by falling materials. At the great fire at Blandford, which happened as late as 1731, the engines were all burned or disabled within half an hour after the breaking out of the fire.

1674.—Soon after the Great Fire of Lond. considerable attention, as might naturally be expected, began to be paid to the subject of Fire Engines; and the respective manufacturers showed much vigour in the way of making the distinctive advantages of their engines known.

Sir Samuel Morland, who was a man of science, and probably only an amateur manufacturer of F. Engines, issued a broad-sheet, at the head of which it is stated that, "having made a final agreement with his workmen concerning his new pumps and water-engines, and having brought them to as low rates as can be afforded, he has thought fit for the better satisfaction of all persons concerned to publish the following schedule." It proceeds:—"Engins to quench Fire, or wet the sails of ships, such as were tryed before His Majesty near the Banquetting-House at Whitehall, and compared with the Whitehall Engins upon Tuesday the 16th Feb., and upon Tuesday 23 Feb. before the Rt. Honble. the Lord Mayor and the Worshipful the Aldermen of the City of Lond. and several other persons of Quality at Grocers-hall, where were likewise brought by the Lord Mayor's official order, two of the best Engines of the City to be compared with them," were offered at prices ranging from £23 to £48.

Then occurs the following advertisement: "These are to give notice that the articles between Sir Samuel Morland and Isaac Thompson (Their Majesty's Sworn Engine-maker) being expired, the said Thompson is now at liberty to make any Engine for quenching Fire," etc., etc. Then another advertisement from Thompson: "These are to give notice that Isaac Thompson (His Majesty's Sworn Engine-maker) hath found out a way, with a brass elbow and joint, to fasten a leather pipe upon any common or church engine, which (in case of fire) shall not only carry the water as high and as far to the front of a house, as with the brass pipe formerly upon the engine, but also may be carried into any house, yard or alley, as well and in all respects as any other engine."

Sir Samuel Morland next made an attempt to obtain the passage of a Bill through Parl. "enabling him to enjoy the sole benefit of certain pumps and water engines by him invented"—giving him, in fact, a monopoly in the manufacture of fire engines. The Bill was read on 12 and 13 Feb. 1674, but did not pass. It was of course strongly resisted by the other makers. He then pub. a paper: *Sir Samuel Morland's answer to several papers of reasons against his Bill for his new water engine*, wherein he says:

> Sir Samuel Morland, after 20 years study and trying experiments, and the expense of some thousands of pounds, brought to perfection a new way of raising and forcing of water to any reasonable height by the help of engins, whose principal parts are two, viz: (1) The playing of a brass bucket or forcer into a chamber of water through a narrow neck of brass, in which is placed a small fillet of leather, curiously prepared; (2) The reducing the circular motion of a crank into a perpendicular motion, with a frame of iron between two rollers of brass. . . . Now if it can be proved that the abovesaid principal parts of these engins have been used by any person either in England, or any part of Europe, before the said Sir Samuel Morland showed them the King, in the Privy Garden, about 4 years since; or if it can be proved that ever 12 barrels an hour were raised by the force of one man 140 foot high, in any part of the world, he expects no favor in the least. But if neither of these things can be made out, then he hopes that the frivolous suggestions of malicious and ignorant men shall not hinder him from having the same encouragement which has been given formerly to others, and was really intended to him by this Honourable House.

To this there came an elaborate broad-sheet reply: *Reasons offered against the passing of Sir Samuel Morland's Bill touching water engines*, wherein there is the following:

> The cause and ground mentioned as the inducement to pass the Bill for his sole making and using the water engines, is in general only that he hath invented the making of several new pumps and other water engines for raising and forcing up great quantities of water to great heights, which is a suggestion that, if admitted, is conceiv'd not to be a fit foundation for the structure he would erect: for that (1) he may possibly invent that which others unknown to him may have invented before, who would by such means be utterly depriv'd of their just labours and livelyhoods, the avoiding whereof was the cause that the liberty reserved for grants for 14 years by the stat. 21 Jac. c. 3, restrains them to the first and true inventors. (2) The suggestion mentions his inventing the making of several new pumps and other waterworks; but the Bill, as endeavour'd by him to pass, deprives all others of the making and using of all such, although they have invented likewise the making of several new pumps and waterworks. (3) Any small circumstantial addition invented to pumps and waterworks may be styl'd, as to that part, an invention thereof, when nothing else was new; by which pretence, also, he would endeavour to exclude the inventions of others: whereby all attempts of this kinde by others must be laid aside until Sir Samuel please.

We hear no more of the controversy.

1675.—An account of some of the fire engines of which we have given details was pub. in the *Phil. Trans.* vol. ii.

1676.—On the 26 May this year a great fire occurred in Southwark, destroying some 500 houses. At this fire the "first fire engine *with leathern pipes* ever used in this country" was present, and through its instrumentality St. Thomas's Hospital appears to have been saved. In the *Lond. Gazette* of 14 Aug. this year appeared the following advt.: "Whereas His Majesty hath granted letters patent unto Mr. Wharton and Mr. Strode for a certain new invented engine for quenching of fire, with leathern pipes, which carries a quantity and a continual stream of water with an extraordinary force to the top of any house, into any room, passage, or alley; being much more useful than any that hath

hitherto been invented, and was attested under the hands of the masters of St. Thom
Hospital and officers of the same parish, as in the late great fire of Southwark, to t
great benefit and advantage."

In the same year Theodore Lattenhowers, of Holland, obtained a patent for an en
"with leather pipe for raising water for drenching fire, and other uses;" which we
vested in Messrs. Wharton & Strode. (See 1696.)

1688.—It is generally stated that it was during this year that the improved ma
F. engine was introduced into Eng. from Holland; but we have met with no circ
stantial account of such introduction,—unless indeed, which is not at all improbabl
was this improved kind of engine which Wm. III. brought over with him, when
landed at Torbay in Devonshire this year. It is recorded that he brought a "quan
of F. engines and implements" with him. Mr. Young says several engines bearing
date were in Lond. in 1847; but he says they were of imperfect construction, having
air-vessel.

Who among the makers of what we must call modern fire engines conceived the i
of the air-chamber is not known. Beckmann could find no older engine with an
chamber than that of which Perrault has given a description, wherein he says it was k
at the King's Library at Paris, and during fires could project water to a great height;
it had only one cylinder, and yet threw out the water in one continued jet. He menti
neither its age, nor the inventor, but his book was printed in 1684. The principl
this machine had been mentioned before by Mariotte, who on this account has been
sidered by some the inventor. (See 1725 and 1739.)

1689.—A manual fire engine manufactured in Lond. at this date was as recentl
1857 in existence and in good working order in the village of Bethlehem, Pennsylvar
from which it has been reasonably inferred that the making of fire engines was a reg
business in England at this date.

1696.—A fire broke out at St. Thomas's Hospital, which gave predictions of b
very serious, "had not the fire engines again been at hand." The following certifi
was signed a few days later:

> Wee whose names are underwritten doe certifie all whom it may concern that Dr. Theod
> Lallerhone [? Latterhowers], inventor of the new engine, did with the said engine very great ser
> in the late dreadful fire in Southwark, yt (under God) it was a greate meanes of saving the hospi
> and all the contiguous parts of Southwark, it being farr more effectuall for the quenching of the
> than any other engines we had with us.
>
> The said Doctor hath laid out at the said time of the fire, for labourers and workmen for the
> engine, the sum of two pounds four shillings and sixpence, besides his pains and troubles, and emi
> dangers that he was exposed to.—Thomas Halchett; John Scott, Minister of St. Thomas; Fra
> Pound, Churchwarden; Bernard Whittle, John Carter, Overseers of the Parish; John Hall.

1699.—Dumourier Duperrier obtained from the King of France the exclusive r
to construct in Paris those machines called *Pompes Portatives*. He ultimately made
kept in repair 30 of them for that city.

1712.—Nicholas Lavis Maundrell and John Grey obtained a patent for making
engine for raising water "in a new and surprising manner, of great use in extinguis
fires." In the *Post Boy* of 19th April, 1715, appeared the following adv., evide
relating to the same, although the spelling of the name is different:

> Whereas her late Majesty was graciously pleased to grant unto Nic. Mandell, Esq., and Comp
> the sole making and vending of two new invented engines, the one for discharging and casting wat
> a greater quantity to a greater height and with much more ease than any hitherto invented;
> useful for clearing of ships, draining of fenns, mines, watering gardens and quenching f
> N.B.—This engine throws up water in a continued stream, which by a leather pipe may be dire
> to any room or part of a house; and for the benefit of the publick, Notice is hereby given that an
> the fire engines (which now only squirt, whereby a great part of the water and the force thereof is
> may, at a very small expence, be altered to play with a continued stream and throw the water hi
> than at present they can do, and may be useful with or without a leather pipe as occasion may req

1720.—During this year, when the South Sea Bubble mania was at its height, t
were several projects for fire engine cos. In the *Daily Courant* of 12th May in
year we observe the following, relating to one of these:

"All persons interested in the new invented water engine, pursuant to her late Majes
letters patent, are desired forthwith to pay to Messrs. Jenkins and King, banker
Lombard Street, the respective sums by them agreed to be advanced for their sev
shares therein."

Leupold, a maker of fire engines in Germany, is reputed to have been the first per
in modern times to employ the air-vessel in their manufacture. He pub. a small w
consisting of four 4to. sheets, this year (1720), in which he gives an account of his inv
tion; but he is believed to have manufactured these engines at a much earlier date,
to have kept this feature of his invention a secret. [HAND ENGINES.]

1721.—Richard Newsham, of Lond., pearl-button maker, obtained his first patent
"a new water engine for the quenching and extinguishing fires," "which by its cont
ance in working with more winches and cranks on the outside than any water en
heretofore made. . . . And as it excells all other engines in the performance,
likewise differs in the invencion and contrivances; and the peticioner conceives it ma
properly called a perpetual engine for quenching and extinguishing fires; that he
play'd his said engine before severall great persons, and also before the directors of

Hand-in-Hand Ins. Office, who were extremely well satisfied with the performance thereof." The *Weekly Journal* of 28th Oct. this year contained the following: "Mr. Newsham played his new invented perpetual water engine to quench fire before the Lord Chancellor at his house in Lincoln's Inn Fields, which gained great applause."

1724.—William Mason and Thomas Chamflower patented a machine called "a Syphon or Attracting Engine for Raising Water to Extinguish Fires," in which they used segments and chains for working the pistons, just as was done by Newsham *in the year after*.

In the same year the famous chemist, Godfrey, wrote as follows:

> The devouring element Fire has set men of all nations upon contriving machines to conquer the same. The most excellent of all hitherto known are the *Water Engines*, of late brought to such a pitch of perfection, that by their means water may be forced up to a surprising height, with almost incredible swiftness, in a large and continued stream. These engines are of admirable use in open fires, and even great conflagrations, for they not only, by conveying large quantities of water, serve to subdue the main flames, but likewise, by their continual playing on all sides against the circumjacent buildings, are found most efficient in preventing this consuming element from spreading. To these many years ago, the Germans, seeing that the inner apartments and back rooms of houses hardly ever escaped being reduced to ashes, the stream of the engines not being able to reach them, have made an addition of leather pipes of a very great length, and several inches diameter, with a screw on one end to fix to the nosel of the engine; on the other a short wooden or brass pipe, for the readier discharge of the water. These they call *water serpents*, and use them to guide water from one room into the other, either to preserve or extinguish: one of the firemen holding the end in his hand, and directing the stream which way he finds most necessary.
>
> This additional improvement has been found so serviceable, that it has likewise met with a very favourable reception amongst us, and ought never to be mentioned without due applause. But yet everybody is of opinion that with all their improvements these water engines are far from being a sure remedy against fire. Again, in the case of castles, towers, or other buildings or high places, these engines cannot be brought near enough to lend any assistance. Who is not fully satisfied that the great charge of purchasing and the continual expense of keeping water engines in repair is the chief reason why most towns in this kingdom are, unhappily, as yet, destitute of these so great and necessary helps?
>
> These considerations have induced me to endeavour to invent a method of supplying these defects, and jointly with them be effectual to overcome this formidable enemy at all times and places.

He then proceeds to describe his process of extinguishing fires by chemical appliances, of which we have already given an account under FIRE ANNIHILATORS.

1725.—Richard Newsham patented another engine. This engine employed a second set of men, who stood upon the engine above the levers, and assisted with *their feet* to work the lever in the hands of the men below. This was accomplished by treadles, and great results were produced. The Americans called these engines *two-deckers!* (See 1726.)

Du Fay saw one of Leupold's engines at Strasburg, and discovered by conjecture the construction of it, which he made known in the Transactions of the Academy of Sciences at Paris for that year. It is very curious that on this occasion Du Fay says nothing of Mariotte, or of the engine in the King's Library.

Mr. Young says: "It was in the first quarter of the 18th century that the Manual Engine began to have the attention of observant and practical men given to its development and improvement, and the results were of a most beneficial and satisfactory character. By these improvements the engine was greatly increased in utility and efficiency, and the especial advantages and convenience to be gained by the invention and application of flexible hose were enabled to be fully brought out."

1726.—About this date John Fowke, of Nightingale Lane, Wapping, issued an adv. in which he states that he "undertakes to make engines to work by water, wind, horses, or men, whereby large quantities of water may be raised to serve cities, towns, noblemen's seats, and fountains." In the matter of Fire Engines, Mr. Fowke came into speedy collision with Mr. Newsham. A trial of the engines of these respective makers took place. Here is Mr. Fowke's account of it:

> Upon that occasion Mr. Newsham attempted to show them that he could also play two streams at once, but his performance was so trifling, and done in so preposterous a manner, that he only got shame, but no credit thereby; nor does he know to this day the reason why his engine could not play above half so far as Mr. Fowke's play'd at Ratcliff. Wherefore by reason of such his ignorance he lately has endeavour'd to persuade the publick that the way of playing with double streams does not answer. Those gentlemen were otherwise satisfied that Mr. Fowke's double stream had a much greater and forcible effect, and that his engines might be worked by any strangers whatsoever. And they were as well satisfied that Mr. Newsham's men (who were used to and instructed in dancing and treading in due time upon his engines) could only show them in the greatest perfection; and that by strangers it was utterly impossible to be effected. And therefore they rightly concluded Mr. Newsham was conscious to himself that strangers would tread confusedly and not keep time with the pumpers, and consequently would destroy each other's powers, and do more hurt than good, or else he would not have refused strangers to play his engine.

Those who desire a less highly coloured version of the trial may consult the *Daily Post*, 8th Nov. 1726; but the controversy was by no means ended.

1734.—In a book entitled *Universal System of Water and Works*, written by Stephen Switzer, the further stages of the great controversy between the two rival makers of pumps and F. engines, Fowke and Newsham, are narrated. The scene opens with the circular of Fowke, which was as follows:

> Mr. Fowke, Nightingale Lane, Wapping, makes—1. Constant streamed engines for extinguishing fires; the larger sizes play two streams at once, being the first and only of their kind, and does the office of two engines, and so contrived as to be drawn through, and, if occasion requires, worked in a passage three feet wide, which no other can, and will feed themselves with a sucking-pipe. Their movements are easy and natural, having a perpendicular stroke, and are without either rack, wheel, chain or crank, whereby the friction is lessened more than any others, and consequently requires less

strength, are more useful, and less liable to disorder and decay, and much cheaper than any other, and therefore are by judicious persons esteemed preferable to all others. By screwing a pipe they water gardens, dispersing the particles of water for about fourteen yards square, like small rain. The four larger sizes run on wheels, and the other two carried by two men like a chair.

In the extract from the second circular it is stated that Newsham endeavours to counteract Fowke, which Fowke also does in respect to him. In his circular of engines he introduces them to the public as follows:

Richard Newsham, of Cloth Fair, London, engineer, makes the most useful, substantial, and convenient engines for quenching fires, which carries continual streams with great force. He hath play'd several of them before His Majesty and the nobility at St. James's with so general an approbation that the largest was at the same time ordered for the use of that royal palace. The largest engine will go through a passage about 3 ft. wide in complete working order, without taking off or putting on anything, and may be worked with 10 men in the said passage. One man can quickly and with ease move the largest size about in the compass it stands in, and is to be play'd without rocking upon any uneven ground with hands and feet, or hands only, which cannot be paralleled by any other sort whatsoever.

There is conveniency for above 20 men to apply their full strength, and yet reserve both ends of the cistern clear from incumbrance, that others at the same time may be pouring in water, which drains through large copper strainers. The staves that are fixed through the leavers along the sides of the engine for the men to work by, though very light, as alternate motion with quick returns require, yet will not spring and lose time the least; but the staves of such engines as are wrought, and the ends of the cistern, will spring or break if they be of such length as is necessary for a large engine when a considerable power is apply'd; and cannot be fast because they must at all times be taken out before that engine can go through a passage. The playing two streams at once do neither issue a great quantity of water, nor is it new, or so useful, there having been of the like sort at the steel yard and other places 30 or 40 years; and the water being divided the distance and pace are accordingly lessen'd thereby.

Those who pretend to make the forces work in the barrels with a perpendicular stroke, without racks, wheels, chains, crank, pulley, or the like, by any kind of contrived leavers or circular motion whatsoever, with less friction than if guided and worked by wheel and chains (which of all methods is the best), do only discover their ignorance; they may as reasonably argue that a great weight can be dragg'd upon a sledge with as little strength as if drawn upon wheels.

As to the treddles on which the men work with their feet, there is no method so powerful with the like velocity and quickness, and more natural and safe for the men. Great attempts have been made to exceed, but none yet could equal this sort; the fifth size of which hath play'd above the grasshopper upon the Royal Exchange, which is upwards of 55 yards high, and this in the presence of many thousand spectators.

Those with the suction feed themselves with water from a canal, pond, well, etc., or out of their own cisterns, by the turn of a cock, without interrupting the stream. They are far less liable to disorder, much more durable in all their parts, than any extant, and play off large quantities of water to a great distance, either from the engine or a leather pipe, or pipes of any length requir'd (the screws all fitting each other). This the cumbersome squirting engines, which take up four times more room, cannot perform; neither do they throw one-fourth part of their water on the fire at the like distances, but lose it by the way; nor can they use leather pipe with them to much advantage, whatever necessity there may be for it. The five large sizes go upon wheels well box'd with brass, fitted to strong iron axles, and the other is to be carried like a chair.

Newsham here declares his engines had thrown a stream "upwards of 55 yards high"—or a height equal to 165 ft.—"in the presence of many thousand spectators." Now (says Mr. Young) this height *may* have been reached during the trial; but it is thought it should have been said that to those standing near the engine it *seemed* to throw to that height: it being well known that the actual would be far less than the apparent, owing to the angle at which the spectators on the ground would view the grasshopper and the stream of water thrown by the engine.

A writer in the *Lond. Mag.* for 1752 remarks of Newsham, that in his engines he gave "a nobler present to his country than if he had added provinces to Gt. Brit."

Mr. Young (*Fires, Fire Engines*, etc.) says: The chief improvements in the Manual Engine made since the time of Newsham consist in the substitution of metallic valves for those of leather; the disuse of treadles, sectors, and chains; the substitution of metal for wood in most parts of the carriage; increasing the length of the carriages and levers, so as to admit of a greater number of men being employed; arranging the levers so as to fold up into a shorter length for travelling; mounting them on springs, and arranging them so as to be drawn by horses; providing places in the engine in which the various appliances and equipments necessary for use can be carried with it; curving the waterways, increasing the size of the passages, and diminishing the resistance to the passage of the water, and the application of the air-vessel to the suction of the engine. We think there might have been added the contrivances now used for preventing mud and gravel from entering the engine by the feed. A mere brief enumeration of the subsequent inventors will suffice for our present purpose.

1735.—Mr. Hone says, in his *Year Book*, under date 25th Aug. apparently in this year, that Mr. John Lofting, a merchant of Lond., was the inventor and patentee of the Fire Engine. He makes this statement on the authority of a rare engraving of Mr. Lofting which he had seen. "In one corner of it is a view of the Monument, and in another the Royal Exchange, etc. The engines are represented as at work, with letterpress explanations." We have seen that Fire Engines were invented long before the Monument was erected. The first Royal Exchange was erected in 1571, but this was burned in 1666, after which No. 2 was erected.

1739.—Belidor, in his *Architecture Hydraulique*, states that M. Perrault, in his commentary on Vitruvius, speaks of a pump which was in the King's Library in Paris in his time, which "threw water to a great height at fires, and that this machine possessed a great feature which none of the others had." He also describes a "Fire Pump" made at Strasburg; and a similar one made at Ypres. They had no air-vessels.

1769.—A manual fire engine made by Neubert was tried at Hamburg, and when worked by eight men threw water to a height of between 62 and 63 ft.

1774.—John Blanch patented a pump or engine to act as a common pump, and for extinguishing fires, which, according to the statement in the patent, would "force the water 50 yards high in a constant stream."

1780.—An engine made by Hadley about this period was fitted with treadles, sectors, and chains. It had a single delivery, and the pipe leading from the air-vessel was curved, instead of being at right angles. [This last improvement was again applied by Mr. Tilley in 1837.]

1785.—Mr. Joseph Bramah, of Piccadilly, engine-maker, obtained a patent for a "hydrostatical machine upon a new construction," in which the "advantages principally arise from the piston's having its motion round a centre, in a rotary direction, instead of reciprocating in a straight cylinder, by which the fluid is kept in constant motion. This said engine will in many respects be found superior to any such as reciprocate in a straight cylinder on the common principle, especially for extinguishing engines and various sorts of pumps." Several of these engines existed in Lond. down to a recent date.

1792.—Mr. Charles Simpkin (afterwards of the firm of Hadley, Simpkin & Lott), Lond., patented an improvement in fire engines.

1794.—In the *Trans. of the American So. of Arts* will be found a plan proposed by Mr. Benjamin Dearborn for making a common lift-pump throw water.

1796.—Mr. R. Buchanan, of Rothsay, arranged the common pump so that it might be used as a fire engine.

1797.—Sir Samuel Bentham arranged a force-pump so as to be worked like a capstan by 30 men, and he found he could obtain a good stream of 110 ft. horizontally, and from 60 to 70 vertically.

1807.—About this date Messrs. Sellers & Pennock, of Philadelphia, substituted the use of rivets in the manufacture of leather hose. Previously the seams had been sewn. The rivets add greatly to the strength.

1811.—In July a trial was made "upon 'Change" between a fire engine belonging to the *Royal Exchange* Ins. Office and an engine on a new construction invented by Lord Stanhope, his Lordship being present to witness the performance. "That belonging to the *Royal Exchange* Assu. Co. succeeded in throwing the water to the greatest distance, both in a perpendicular and horizontal direction, but it could not be compared with Lord Stanhope's as to the body of water thrown at one time."—*Ann. Reg.*

1819.—Mr. Jacob Perkins, of Lond., introduced the use of copper rivets in the manufacture of leather hose. This was regarded as a great improvement, and they are still used. He also invented a new hose coupling, which prevented the necessity of twisting in the operation.

1820.—Mr. Wm. Baddeley commenced a series of improvements in fire engines, which have been recorded in connexion with his name.

1827.—A rotary manual fire engine invented by Mr. J. M. Cooper was tried at New York against some of the ordinary engines there. The result of the experiment is not clear.

1830.—Mr. James Braidwood, then Master of the Edin. Fire Engines, pub. a work: *On the Construction of Fire Engines and Apparatus, the Training of Firemen, and the Method of Proceeding in Cases of Fire.* He gives therein a somewhat elaborate description of manual fire engines as then constructed, and advocates that a prem. should be offered for the best engine of a size previously agreed upon, which, when finished, should be kept as a model. He was in favour of small engines. Hereon he says: "I always prefer two six-inch barrel engines to one which throws twice that quantity of water, and besides, *by having two engines*, the fire may be attacked in one or more points, as may be deemed advisable." On his proposed plan, specifications could be made out, and estimates advertised for, for all the different parts, such as wheels, axles, levers, cisterns, barrels, soles, air-vessels, etc., separately. When any particular part of an engine was damaged, it could be immediately replaced, and the engine again rendered fit for service; and upon emergency any number of engines could be set up, merely by putting the different parts together. "The work would also be better done; at least it would be much more easy to detect faults in the material or workmanship than if the engines were bought ready for use." These remarks apply to all the rest of the apparatus.

1835.—Mr. Merryweather made some improvements in the interior of the nozzles of fire engines, by which a more solid and powerful stream of water was enabled to be thrown, and this form has now come into general use.

In the same year Mr. Tilley (predecessor of Messrs. Shand, Mason, & Co.) introduced a manual engine constructed entirely of metal—not a particle of wood being employed.

1837.—Mr. Tilley made the water-ways to the delivery hose in a curved form instead of proceeding at right angles from the outlet of the air-vessel as previously, and applied it to one of the floating engines on the Thames.

1842.—Mr. Merryweather constructed a F. engine on railway wheels for the Lond. and North-Western Railway Co. The largest engine for land service that had been built.

1845.—Mr. Farmer, of Birmingham, constructed a manual F. engine with a fan-wheel with four blades, which was made to revolve rapidly in a circular box by the power of 6 men. It was 4 ft. long by 2 ft. wide, and threw 80 gals. of water per minute.

In the same year Mr. White patented a manual engine embracing a novel arrangement of small pumps. With 12 men it threw water 129 ft. high.

1847.—Mr. Baddeley brought out his Farmer's F. Engine, which was commended by the Jury of the Great Exhibition of 1851.

1849.—Mr. Gossage brought out a F. engine which consisted of two force-pumps, with an air-vessel between them.

Same year M. Letestu, of Paris, exhibited some F. engines at the Paris Exhibition, which were commended for the ingenious, simple, and economical arrangement of the pistons, and the large sectional area of the suction and force pipes in comparison with the barrel. They gave "greater useful effect in proportion to the power expended in driving them than any others, in the dynamometrical experiments of Capt. Morin." A prize medal was awarded. (See 1851.)

1851.—At the International Exhibition held in Lond. this year, F. engines were exhibited by Messrs. Shand & Mason; Mr. Merryweather; Messrs. G. Perry & Bros., Montreal; and M. Letestu, of Paris. The first named exhibited "a Lond. Brigade carriage F. engine, worked by 28 men; metallic valves;" for which latter it took a prize medal. Messrs. Perry exhibited a carriage F. engine, to be worked by 40 men. The Rep. of the Jurors says:

> Highly commended for the large proportion of the sectional area of the suction-pipe to that of the barrel, the large dimensions of the valves, the application of an air-chamber to the suction-pipe, and the general arrangement. In the experiments made by direction of the Jury no other engine threw a column of water so high as this, or discharged so great a body of water per man, or yielded so great an amount of work per man, measured by the *vis viva* of the water passing the nozzle. A prize medal is awarded.

M. Letestu exhibited—1. A F. engine without a carriage to be worked by 10 men. 2. A marine F. engine to be worked by 10 men. The Jurors say: "Highly commended for the ingenious, simple, and economical arrangement of the pistons, the large dimensions of the valves, and the large sectional area of the suction and force pipes in comparison with the barrel. . . . The Jury have awarded a prize medal for these engines."

Regarding Mr. Merryweather's "Lond. Brigade carriage F. engine, to be worked by 30 men," there were some competitive experiments, the result of which we do not find clear.

1856.—Mr. Braidwood, in his paper on "Fire," read before the So. of Arts, says:

> The description of F. engines found to answer best in the metropolis are those with 7-inch barrels and 8-inch stroke, throwing at the ordinary rate of working about 90 gallons of water per minute. If a larger engine is thought desirable, two of these can be easily joined together in one stream, giving 180 gallons per minute. The size is preferred because the weight, with hose, implements, firemen, and driver, is about 30 cwt., which is as much as two fast horses can manage for a distance under six miles. It is not often that the engines are required to travel further than this; when they are, four horses are used.

He adds that the Committee of the Lond. Fire Engine Estab. had then lately turned its attention to steam floating fire engines. [FIRE ENGINES, MANUAL AND STEAM, FLOATING.]

Same year, Mr. Wm. Roberts, of Millwall, constructed a manual engine, of which the body was entirely of iron, and the handles telescopic, so as to permit of its being worked by 52 men, if desired.

1859.—Mr. Blinkhorn patented a pump known as De la Hire's, from having been invented by that gentleman in 1686, when he tried it as a F. engine. Mr. Baddeley had also tried the same pump in 1833.

Captain Fowke simplified the construction of F. engines. See HAND ENGINES.

1862.—At the International Exhibition held in Lond. this year, a number of F. Engines were exhibited; these were in part manual and in part steam. We speak of the Steam F. Engines under a separate head. Regarding the Manual Engines, a trial of these took place on 17th June, in Hyde Park, near the Serpentine; the day being in every way most suitable. The results of the trial are too complicated to be given briefly. Several of the engines broke down altogether. After this competition the Jurors proceeded to make their award. The respective merits of the engines were considered with reference to the following points—those engines being recommended for medals or other approval which combined excellence in the greatest number: 1. Weight and size of engine. 2. The quantity of water delivered at certain heights and distances. 3. The depth from which the water was drawn. 4. The power employed. 5. The material, price and general construction. The awards were finally made as follows:

Maker's Name.	Remarks.	Award.
Fowke	As inventor; engine well adapted to military purposes.	Medal.
Kurtz	Compactness, simplicity, and good performance.	Hon. Men.
Letestu	Excellence of construction; durability, and good workmanship.	Medal.
Merryweather	Improvements in design, good workmanship, and performance.	Medal.
Roberts	Ingenuity of design.	Medal.
Shand & Mason	Good workmanship and excellent performance.	Medal.

There were other exhibitors, viz. Mr. Rose, Manchester; Messrs. Blinkhorn & Co.; Broughton Copper Co. Among the Jurors were Mr. Bateman, C.E.; Mr. W. M. Browne; Mr. J. Hawkshaw, C.E.; Mr. J. E. McConnell; Capt. Shaw; Duke of Sutherland; Mr. F. B. Taylor, C.E., U.S.

Mr. Drummond, the then Chairman of the Lond. F. Engine Estab., said before the Select Parl. Committee on Fire Protection, which sat this same year; "The common engines are perfectly satisfactory for everything under 60 feet high. When the fire is above 60 feet they are of very little use." "Our large (manual) engines throw a very powerful body of water, but they do not throw it to a sufficient height." "When it comes to high buildings, the power of going to the great height of 150 feet is a very great thing."

1865.—Messrs. Merryweather & Sons manufactured a small manual engine, fitted with springs, mounted on two wheels each 4 ft. in diameter, arranged to be worked by 6 men, and easily drawn by one; its weight being 4¼ cwts.

1866.—Mr. Charles F. T. Young, C.E. pub.: *Fires, Fire Engines, and Fire Brigades: with a Hist. of Manual and Steam Fire Engines, their Construction, Use, and Management; Remarks on Fire-proof Buildings, and the Preservation of Life from Fire; Statistics of the Fire Appliances in English Towns; Foreign Fire Systems; Hints for the Formation of and Rules for Fire Brigades; and an Account of American Steam Fire Engines.* We have made considerable use of this work in the preparation of the present art., but this must not close our eyes to the fact that the work, while highly useful, has many blemishes, more particularly that of partisanship.

1873.—At the great International Exhibition held in *Vienna* this year, fire engines, steam and manual, formed a very prominent feature; most of the countries of Europe, as well as the U.S., were in the list of competitors. We are not familiar with the results of the awards.

FIRE ENGINES, MANUAL AND STEAM, FLOATING.—In maritime cities, where merchandise is unladen from ships and lighters into warehouses by the side of the water, the advantage of floating fire engines would soon become apparent; indeed, such appliances would become almost a necessary means of protection—the land approach to many of these water-side premises being often very inconvenient, and under some circumstances almost inaccessible. The water approach, while it will usually affords more freedom of action, has the advantage (subject to fluctuations in tide) of affording to the floating engine an immediate and continuous supply of water. Under these circumstances it may well be that much reliance is now placed by the Lond. F. Brigade upon its floating engines.

Mr. Young assures us that the date at which floating fire engines were first employed on the River Thames or elsewhere cannot now be ascertained; but he had seen in the books of Messrs. Shand & Mason an entry of the cost of repairing the floating fire engine belonging to the *Lond. Assu. Corp.* in the year 1793. In the same books, he says, there is an entry of repairs done to the floating fire engine belonging to the *Sun* in 1803, which it is said was at least 40 years old at that time. These, it need hardly be said, were manual engines only. The first *steam* fire "floater" was constructed in 1850. We shall follow up the subject chronologically as far as possible.

1790.—Towards the close of the last century Lieut. Jekyll, R.N., succeeded in converting a ship's pump into a fire engine, which, when worked by 7 men, threw a stream of water 76 ft. high and 108 ft. horizontally. When 3 pumps were set to work into one receiver, he found that the water was thrown much higher, and with great force.

1812.—Mr. Tilley, predecessor of Messrs. Shand, Mason & Co., constructed a floating fire engine worked by the crank motion, for service in the Lond. Docks.

1820.—Mr. Wm. Baddeley made improvements in connexion with these engines, by the application of a portable canvas dam or cistern, so as to avoid drawing up stones or mud.

1827.—Mr. Baddeley made further improvements, with a view of enabling these fire floats to be propelled by means of paddles.

1834.—Mr. Baddeley suggested a new floating fire engine of about 30-horse power as the *ne plus ultra* of fire extinguishing machinery.

1837.—The Lond. F. Engine Estab. had a new float built, on which there were *three fire engines.*

1840.—Mr. Merryweather made a new floating fire engine for the Russian Gov. on very large dimensions.

Same year Mr. Tilley constructed a floating engine for the Lond. F. Engine Estab.

1850.—The first floating *steam* fire engine on the Thames was built this year by Mr. P. Clark, Assistant Engineer of the West India Docks, and was constructed from one of Downton's pumps, fixed in one of their tugs, so as to be worked by the machinery which propelled the tug. It threw 600 gals. of water per minute 20ft. higher than the highest warehouse in the docks.

1851.—Mr. Braidwood had one of the donkey engines of Messrs. Penn & Son arranged as a F. engine, with air-vessel, etc. The steam for working was supplied from stationary boilers. The results were very satisfactory.

1852.—It was determined—in consequence of the fire at Mr. Alderman Humphrey's wharf at Lond. Bridge the preceding year—to alter one of the floating manual engines of the Lond. F. Engine Estab. so that it might by worked by *steam*. The system of propulsion by "jets" turned out a failure.

In the same year a new steam floater of 80-horse power was built for the Lond. F. Engine Estab. at a cost of £3000.

1854.—A large floating steam F. engine, built for the Lond. F. Engine Estab. at a cost of £3000. This was estimated to throw 1428 gallons p. minute. Upon trial it was found actually to throw 1938 gallons p. minute. At the great fire in Tooley Street in 1861 this float is said to have worked for nearly 400 consecutive hours.

1856.—Mr. Braidwood, in his paper on Fires, read before the So. of Arts, says:

> The Committee for managing the Lond. Fire Engine Estab. have recently turned their attention to steam floating fire engines. The first trial was to alter one of the floats previously worked by manual labour. This was found to answer so well, giving 700 gallons of water per minute (ordinary rate of working), under a pressure of 70 or 80 lbs. on the square inch, that another was constructed capable of throwing 1400 gallons per minute, and of moving at the rate of 8 miles per hour, propelled by the reaction of 2 jets of 10-inch diameter, driven by one of Mr. Appold's pumps.

1860.—Mr. Wm. Roberts fitted up the steam-tug *Lucy*, belonging to the East and West India Dock Co., as a floating F. engine.

Same year, Messrs. Merryweather constructed a floating F. engine from designs of Mr. E. Field, C.E., for protection of warehouses of Tyne Docks.

1862-63.—Messrs. Merryweather constructed 2 floating F. engines for service at Newcastle.

1865.—Messrs. Merryweather constructed a floater for the North-Eastern Railway, also for service at Newcastle.

1872.—Messrs. Merryweather & Sons made a new floating F. engine for the port of Marseilles, being 45 feet in length, 8 feet beam, and drawing only 2 ft. 10 in. It drove twin screws, and was especially adapted to use in shallow water. It had 4 water outlets, each capable of discharging 250 gallons p. minute, to a distance of 230 ft.

Floating F. engines steam or manual are now found in most of H. M. Dockyards; also in those at Wilhelmshaven, Kiel, Dantzic, and many other places. Indeed they have become a regular branch of manufacture.

FIRE ENGINES, STEAM.—The application of steam to so many of the purposes of every-day life was certain to lead up to the idea of applying it to the special purpose of accelerating the action of F. engines, where frequently so much depends on vigorous and sustained action. To *England* belongs the idea of this original application; but the U. S. have far outstripped us alike in their manufacture and their general employment. In that country in truth they supplied a want which was felt. Here they had to be driven forward in the face of hesitation and prejudice.

1829.—The first *Steam* F. Engine ever made was constructed this year by Messrs. Braithwaite and Ericsson, Engineers, Lond. It must be regarded as an important event, not only in respect to FIRE PROTECTION, but also in relation to F. INS. This engine was 6-horse power; its weight, with complement of water and fuel, was 45 cwt.; it required 13 minutes to raise the steam to throw a stream of water equal to 45 tons per hour over a pole 90 ft. in height, through either one or two jets, as might be required. This engine was used at fires at the Argyle Rooms, at the English Opera House, at Wells Street, and at Barclay, Perkins & Co.'s Brewery. For further details of its construction see the *Mechanic's Mag.* 1830.

1830.—On the 5th Feb. the Argyle Rooms were destroyed by fire. The cold was so severe that the manual F. engines became frozen and useless; but the steam F. engine manufactured last year was brought into requisition, and worked incessantly for five hours without a hitch, throwing a stream as high as the dome of the building. This should at once have proclaimed the practical value of the invention.

1831.—Mr. Braithwaite made the second steam F. engine—5-horse power. It was worked in France with great success, and afterwards went to Russia.

Same year, the third steam F. engine was made, and went to Liverpool.

1832.—The fourth—the "Comet," 15-horse power—was built for the King of Prussia, for the protection of Berlin. This engine was reputed to be capable of throwing 90 tons of water per hour to a height of 120 ft.

1833.—A fifth engine built—an experimental one, on a new design.

1840.—The Mechanic's Inst. of N. Y. offered a gold medal for the best plan of a steam F. engine. Mr. John Ericsson, of N. Y., obtained the medal, on the production of a plan which turned out to be that of Mr. Braithwaite's and his own first production of this class. It does not appear that any engine was actually manufactured from the plan so produced. On this subject we speak more at large towards the close of the present art.

1842.—Mr. David Napier, of Millwall, contrived a method of heating the feed-water before it passes into the boiler.

1850.—Mr. P. Clark, Assistant Engineer to the West India Docks, arranged one of Downton's pumps in one of their tugs, so that it could be driven by gearing from the engine. This was the first floating steam fire engine on the Thames, and threw 600 gallons of water per minute to a great height. [FIRE ENGINES, M. AND S., FLOATING.]

We see these steam F. engines being manufactured here, and sent for the protection of foreign cities. One of the reasons, if not the main reason, why there was so much delay in introducing the use of them in the Lond. Brigade was the belief of Mr. Braidwood that the supply of water in the Lond. mains was actually insufficient for their requirements. It was, however, found upon trial that the supply was sufficient for moderate-sized engines of this class. Large ones such as are in use in some of the continental cities, and in the cities of the U. S., could not, unfortunately, under existing arrangements, be made available in Lond. on account of the inadequate water supply.

1851-2.—During these years experiments were tried in the application of steam to the working of the floating engines of the Lond. F. Brigade with successful results. [FIRE ENGINES, M. AND S., FLOATERS.]

1853.—The *Journal of the So. of Arts* contained the following:

> The prevalence and progress of destructive fires in America is, it may not be generally known, diminished very much by the use and application of what is known there as the Steam Fire Engine. In its form it is somewhat similar to a locomotive, throws upwards of a 200-ft. jet, and about 2000 barrels in an hour, in from 1 to 6 streams of water. The machine may be put in operation in 5 minutes, requiring 4 men and 4 horses; and is calculated, it is said, to do as much as 6 of the ordinary hand engines. . . .

The progress of *Steam* F. Engines in the U. S. will be noticed at the close of the present article.

1856.—Messrs. G. Rennie & Son constructed a portable disc engine and disc pump mounted on wheels for H.M.'s Dockyard at Woolwich, either as a steam F. engine or as a pump.

1858.—Messrs. Shand & Mason constructed their first land steam F. engine, on the patent of Mr. Shand; and the same was sent to Russia.

1859.—Messrs. Shand & Mason produced another steam F. engine, which produced very excellent results.

1860.—Mr. James Shekleton, Engineer, of Dundalk, constructed the first steam fire engine ever made in Ireland. It was constructed in part upon an American model.

In July this year, at a fire at the back of Doctors' Commons, the first land steam fire engine was used by the Lond. F. Engine Estab. This engine, when fully equipped for service, weighed 4 tons 4 cwt., and required 3 horses to draw it. Mr. Braidwood reported that it "required delicate handling."

During this year also several steam "floaters" were constructed.

1861.—Messrs. Merryweather & Sons constructed from the designs of Mr. E. Field a land steamer, the "Deluge," which was an entire success.

Same year Messrs. Shand & Mason manufactured 3 steam fire engines on wheels to run on the rails, for the Lond. & North-Western Railway Co.

1862.—Messrs. Shand & Mason constructed a steam fire engine for the town of Gottenburg; also 1 for the Lond. F. Engine Estab.

Same year, Messrs. Merryweather & Sons constructed the land steamer "Torrent" for the Lambeth F. Brigade.

Same year, Mr. Wm. Roberts, of Millwall, constructed the first *self-propelled* steam fire engine ever made in England, or Europe. This engine has travelled along the public roads at the east end of Lond. at the rate of 18 miles an hour. [F. ENGINES, STEAM, LOCOMOTIVE.]

Mr. Roberts also constructed the "Prince of Wales" land steam fire engine, not self-propelling.

At the International Exhibition held in London this year several steam fire engines were exhibited, and the first competitive trial of their merits was held in Hyde Park on 1 July. The respective merits of the engines were to be considered in reference to the same "5 points" as have already been set forth in the trial of manual fire engines held the same year. The exhibitors were Mr. Lee (of Messrs. Lee & Larned, of N.Y.), Messrs. Merryweather & Sons, and Messrs. Shand & Mason (2 engines). Mr. Lee refused to enter into the competition, for reasons which he stated, although his engine had already been awarded a medal by the jurors for "ingenuity of design and good workmanship." The jurors were the same as in the case of the manual engines, some of whom we have named. We can only here give the short summary of the results as reported by the Duke of Sutherland and Capt. Shaw:

> Messrs. Merryweather & Son have produced, at a price of £700, a steam fire engine, weighing, according to the makers' account, 65 cwt., with jets and lamp, but without water, coal, suction-pipes, hose, or other gear; and capable, if no accidents occur, of throwing in an available stream the following average quantities of water per minute:

Distance ...	61 feet	Angle ...	10°	Quantity ...	230 gals.
"	85 "	"	21°	"	124 "

> Messrs. Shand & Mason have produced an engine, at a cost of £650, weighing, according to their statement, 55 cwt., with jets and lamps, but without water, coal, suction-pipes, hose, or other gear; and capable of throwing in an available stream the following average quantities of water per minute:

Distance ...	61 feet	Angle ...	10°	Quantity ...	250 gals.
"	63 "	"	18°	"	165 "
"	82 "	"	14°	"	172 "
"	85 "	"	21°	"	137 "
"	102 "	"	11°	"	94 "
"	104 "	"	17°	"	19 "

> Messrs. Shand & Mason have also produced, at a price of £370, an engine which, under the same

conditions, weighs 35 cwt., and is capable of throwing in an available stream the following average quantities per minute:

Distance ...	61 feet	Angle ...	10°	Quantity ...	142 gals.
„	63 „	„	18°	„	133 „
„	82 „	„	14°	„	56 „
„	85 „	„	21°	„	27 „

the best performance during the 5 trials from which this last average was taken being 46 gals., and the lowest 5 gals. per minute. At greater distances, in consequence of the wind, this engine could not deliver a stream, but continued working without accident throughout the day, and concluded in the evening by throwing a good vertical jet.

It is hardly within the province of this Committee to suggest improvements, or to do more than comment on what is actually performed; but as the making of steam F. engines is still in its infancy in this country, they consider it important, before concluding their labours, to place on record the following remarks which may be found of service:—

"The results of these trials show that although something has been done towards making a really "serviceable steam F. engine, still much remains to be accomplished. *These results show that a "decided advantage is obtained in working F. engines by steam, as compared with manual power;* "but there appears on the part of all the makers a decided tendency to run their pumps too fast. "The Committee would also draw attention to improvements which may be made in many mechanical "arrangements, viz. in the size of the suction-pipes, the supply chambers and the valves, so as to give "the greatest facility for feeding the pumps and preventing the return of the water."

The trial on the whole was not regarded as satisfactory. A joint letter sent to the *Times* on 30 July by the Duke of Sutherland, Earl of Caithness, Capt. Shaw, Mr. Appold, Mr. Nasmyth, and other persons, suggested that the ins. cos. and the parishes should combine to offer a handsome prize to any one who would invent a light, strong, efficient, and economical steam F. engine.

1863.—Mr. James Shand obtained a patent for improvements which have since been carried out in Messrs. Shand & Mason's steam F. engines.

In the same year they constructed 3—one for the Victoria London Docks Co.; one for Warsaw; and one for Croix, in France.

Messrs. Merryweather & Sons constructed the "Sutherland," which gained the prize of £250 at the Crystal Palace Exhibition. It went to the Devonport Dockyard.

Mr. T. W. Cowan, Engineer, Greenwich, constructed a steam F. engine for the Imperial Library of St. Petersburg.

Messrs. J. W. Gray & Son, Limehouse, London, constructed a land steamer, which at the trial at the Crystal Palace was not considered a success.

Herr Egestorff, of Hanover, constructed a land steamer for that city.

The second competitive trial was held at the Crystal Palace this year, lasting 3 days. Ten engines by English and American makers were present. They were divided into two classes: 1st class, large engines, not exceeding 60 cwt.; 2nd class, not exceeding 30 cwt.:

First Class { 1st Prize, £250, Messrs. Merryweather & Sons, the "Sutherland."
2nd Prize, £100, Messrs. Shand, Mason, & Co.
Mr. Wm. Roberts, "highly commended."

Second Class { 1st Prize, £250, Messrs. Shand, Mason, & Co.
2nd Prize, £100, Messrs. Wellington, Lee, & Co. (Amoskeag Co., U. S.)

The "Manhattan" Engine by Messrs. Lee & Larned, of New York, from which great results were expected, met with such serious injuries before the competition commenced as to deprive it of all chance of success.

This competition took place at the instance of the Lond. F. Engine Estab. The awards caused a good deal of dissatisfaction.

1864.—Messrs. Shand & Mason constructed no less than 17 steam F. engines this year: 2 for the Lond. F. Engine Estab.; 2 for Lisbon; 3 for the Bombay and Baroda Railway Co.; 4 for Russia; 2 for New Zealand; 1 for Austria; 1 for Poland; 1 for Denmark; and 1 for Dublin. This activity of demand prob. resulted from the Exhibition of 1862, at least in some part.

The next competitive trial was held at Middlesburg this year, at the instance of the Dutch So. of Arts. Two English engines competed. 1st. Prize: Gold medal and 500 francs: Messrs. Shand, Mason & Co., Lond., for the best engine. 2nd Prize: Silver medal and 200 francs: Messrs. Merryweather & Sons, Lond., for the next best engine.

In the same year another competition took place at Rotterdam, at the instance of the Town Council, "in order that they might buy the best engine for the use of the town." Two English engines were exhibited: one by Messrs. Shand, Mason & Co., the other by Messrs. Merryweather & Sons. The latter was purchased, and therefore gained the point of competition.

The proverbial wisdom of the Hollanders was shown in the trouble which they took in this important element of F. protection.

In the Rep. of the Lond. F. E. Estab. for 1864 it is stated that:

> The land steam engines have been frequently at work during the past year, and have fully realized all the hopes which have been constantly entertained concerning them. *These machines have now been so much simplified, and brought to such perfection, and the advantage arising from their use has been so frequently and clearly demonstrated, that they have entirely superseded the old hand engines.* Except so far that only six of the former being provided for land service, the old method of pumping must still be frequently resorted to.

1865.—Mr. Wm. Roberts constructed a land steamer, the "Excelsior," for the arsenal, Rio de Janeiro, and a duplicate of it for Hong Kong.—Same year Messrs. Moltrecht, of Hamburg, constructed a small land steamer.—M. Fland, of Paris, also constructed a land steamer.—Messrs. Merryweather & Sons constructed 11 engines, for some of the home dockyards, and for various countries, including Spain, France, and Holland.—Messrs. Day & Co., of Northam, Southampton, completed the first of two land steam engines ordered for a foreign government.

1863-5.—The So. for the Encouragement of Arts, Manufactures, and Commerce (Eng.), impressed with the desirability of encouraging the development of steam F. engines, offered, in the years 1863-4, and again in 1864-5, their medals: 1st, for the best and most efficient steam F. engine for land use; and, 2nd, for the best and most efficient steam F. engine capable of *self-propulsion* on land; the conditions required being: "rapidity in raising and generating steam, facility of drawing water, volume of water thrown, distance to which it can be thrown, lightness, strength, and durability." From various causes there does not appear to have been at present any competition for these medals.

At the International Exhibition held at Cologne this year (1865) there was a competition [the 5th] in regard to steam F. engines. The exhibitors competing were Messrs. Merryweather & Sons, Lond.; Messrs. Shand, Mason & Co., Lond.; and Messrs. Wirth & Co., Frankfort-on-the-Maine. The points on which the competition was to turn were: 1. The time required for getting sufficient steam to work the engines. 2. The quantity of water in general, and especially the density in proportion to the distance over which the water was thrown. 3. The height of the stream. 4. The general construction of the engines, and especially their durability, and steadiness while being worked. 5. The weight, from which to draw conclusions as to their portability. As to raising steam, the Merryweather engine accomplished this in 7 min. 28 sec.; Shand's in 11 min. 28 sec.; Wirth's in 16¼ min. Under the second head the results were variable, but Messrs. Merryweather on the whole succeeded On the 3rd head Messrs. Wirth's succeeded. On the 4th head the decision was deferred. The weights were: Merryweather's, 3813 lbs.; Wirth's, 5833 lbs.; Shand's, 6128 lbs. First prize, 500 thalers (offered by *Colonia* Ins. Co.), awarded to Merryweather; second (gold medal), to Shand; third (silver medal), to Wirth & Co. for Amoskeag Co. of U. S.

1866.—The Metropolitan Board of Works having this year taken over the Lond. F. Engine Estab., many of its members attended an exhibition of the results of some of Messrs. Merryweather's steam F. engines, held at the Grand Surrey Canal, Camberwell. The result was an immediate add. of 4 others for the protection of the metropolis.

We have now traced the history of the first hundred steam F. engines manufactured in Europe. It is not necessary to proceed further in this direction, even if we had available the materials for doing so. They have become estab. facts. No Fire Brigade of any magnitude can be regarded as at all complete without them. They have more recently undergone the desired phase of becoming self-propelling, or locomotive; and this feature is attended with obvious advantages, which will be referred to under a separate head.

It will be useful to place on record the leading requirements in steam F. engines. They may be thus summed up: 1. Quickness in raising steam, so as to be ready for work in the shortest possible time. 2. Simplicity of construction, so as to be easily worked by any person of ordin. intelligence. 3. Strength, so as to avoid breaks down from hard work at fires, or from travelling rapidly to them. 4. Durability, so that its working may not damage it and cause it to be frequently under repair. 5. Lightness, to enable it to be easily and rapidly drawn, with all its accompaniments, by a couple of ordinary horses [this last is not so material where the engines are self-propelling]. 6. Efficiency, to enable it to perform the greatest amount of work for its size and weight. 7. Management, to insure its useful employment when at a fire, and to enable its powers to be varied with ease and certainty, in accordance with the varying requirements of a fire, and thereby enable it to produce the greatest effect with the minimum of damage.—*Young*, p. 308.

Steam Fire Engines in the U. S.—The first steam F. engine constructed in the U. S. was designed and built by Mr. Paul Rapsey Hodge, C.E., a well-known English Engineer, at his works in New York, in the year 1840-1. It was a self-propelled engine—the first of the kind ever constructed—with horizontal cylinders and pumps; a locomotive boiler. Its slab or plate framing, to which the cylinders and pumps were attached, was such as is now used in locomotives; and it had wrought-iron wheels. It was arranged to be drawn by horses if required, or by *hand*. But locomotion by its own steam power was its distinctive feature. Thus although the U. S. was behind Eng. in the orig. manufacture of steam F. engines, it at once accomplished an improvement of very great significance.

It had, says Mr. Young, been generally supposed that the honour of constructing the *first* steam F. engine in the U. S. belonged to Mr. John Ericsson; but the error appears to have arisen from the fact that in the year 1840 he obtained a gold medal which was offered by the Mechanic's Institute of New York for the best plan of a Steam F. Engine. It is now stated that the plan for which the medal was obtained was "almost identical, except in the boiler, with those which had been so successfully manufactured and employed by Mr. John Braithwaite in Lond." No account, he adds, has been found of an engine being made from the plan exhibited, although several accounts about that period speak of what it was intended to be.

Mr. Hodge himself says: "In the year 1840 I induced the several ins. cos. of N. Y. to give me a conditional order for a steam F. engine—my contract being that the engine should be capable of forcing 6000 lbs. of water per minute to a height of 120 feet. *This was many months before Mr. Ericsson landed in N. Y.* . . . Mr. Ericsson made a design for one, but it was never built. It was precisely the same as that built by my friend John Braithwaite in 1829. I would remark that I never saw a steam F. engine in my life up to this period—1840."

The progress of building steam F. engines in the U. S., once begun, has been very rapid, especially of late years. We shall note that progress chronologically:

1840.—First steam F. engine, by Mr. Hodge.

1851.—Mr. W. L. Lay, of Philadelphia, designed a self-propelling engine, provided with a plan by which carbonic acid gas could be used to propel it to the location required, while steam was being raised.

1853.—Mr. A. B. Latta, of Cincinnati, constructed a self-propeller which ran on three wheels. The leading wheel could turn in any direction, so as to admit of the easy steering of the engine. This engine threw water 240 feet, and could be got to work in five minutes.

1855.—Mr. Abel Shawk, of Cincinnati, constructed an engine which was a great success.

1858.—Messrs. Poole & Hunt, of Baltimore, commenced building steam F. engines, and have since built a considerable number. They are of very simple construction.

1859.—Messrs. Ettenger & Edmond, of Richmond, Virginia, commenced this year, and have built several. Their engines are said to have great powers of endurance, one having worked for four days at a great fire.

At the close of this year a great trial of steam F. engines took place at the fair of the Agricultural So. held at Philadelphia, when engines by the following makers were tried: Messrs. Meyrick & Sons, Philadelphia; Messrs. Poole & Hunt, Baltimore; Messrs. Hunsworth, Eakins & Co., Philadelphia; Messrs. Reaney & Neafie, Philadelphia; Messrs. Lee & Larned, New York. Those by Messrs. Reaney & Neafie, and by Messrs. Poole & Hunt, threw the water to the greatest height.

1860.—Messrs. Ettenger & Edmond built an engine of a very powerful kind for St. Petersburg.

Same year, an engine made by Messrs. Neafie & Levy for San Francisco threw water 253 feet horizontally through a 1¼-inch nozzle.

Same year, at California State Fair, Henry Rice, of California City, exhibited a miniature steam F. engine made by himself.

Many other powerful engines were made by different makers during this year, one of which is said to have thrown water to a distance of 292 feet from a 1¼-inch jet.

1865.—At a great parade of volunteer firemen held in Philadelphia in October this year, there were in the procession 57 steam F. engines, 11 hand engines, 102 hose-carriages, 12 hook and ladder carriages, and 21 ambulances, making a grand total of 203 fire apparatus in a line.

Since the date last named, the progress in the manufacture has been most remarkable. Hardly a F. Brigade on that continent is without the aid of a steam F. engine. In a T. we have given under FIRE BRIGADES, FOREIGN, is shown the number of these engines possessed by the leading F. Brigades in the U. S.

Of the **Economy**, in addition to the general advantages, of steam F. engines over manuals, the following testimony has been adduced:

Mr. C. F. T. Young.—The work of the steamer was six to one of the manual, and taking it in equal quantities of water thrown, it will be seen that the steam-worked engine did for 2*s.* 6*d.* that which it would take exactly £9 to do by the use of the manual. Again: A steam F. engine of the best and most reliable construction throwing 330 gals. of water p. minute, or 19,800 gals. p. hour, costs £540; consequently to equal the quantity thrown by this engine it will require at least four manuals *well worked*, which at £130 each is equal to £520. . . . Now at a fire of four hours' duration, throwing the same quantity of water (79,200 gals.) as the steamer, these four manuals, paid at the usual Lond. rate of 1*s.* p. man for the first hour and 6*d.* p. man for each succeeding hour, will give the sum of £14 for the manuals against less than 10*s.* for the steamer.

The *Engineer* says: "A steam F. engine exerting 30 effective horse power will do the work of 150 strong men. . . . For a fire lasting nine hours, and supposing the men to be changed, as it is fair to suppose they must be, every three hours, the labour which a small hand [manual] engine would perform would thus cost £45. The steam F. engine, including wages of attendants, and every possible charge for working, would not cost 15*s.* at the outside, if so much, for the same time of working."

The late Mr. John Drummond, a Director of the *Sun* F. Office, and for some years Chairman of the Lond. F. E. Estab., said before the Parl. Committee of 1862: "The manual engines were found to do very well for anything under 60 ft. high; but when the fire was over that, they were of very little use; and when it comes to high buildings, the power of going to the height of 150 ft. was a very great thing. When we get our steam land engines, which are in process of making, we shall consider ourselves better protected than we now are." He added: "They would gradually replace nearly the whole of the hand engines by steamers."

Captain Shaw, Supt. of the Metropolitan Fire Brigade, says there is an enormous advantage in the use of steam F. engines. He considered the ins. offices would save £1000 by each steam F. engine they employed. In his Rep. for 1862 he said: "In the steam department a considerable increase has been made, and I am now enabled to have at least one land steam engine with steam up at almost every fire. The consequence has been *that many serious and threatening fires have been successfully controlled at an early stage.*" He said before the Parl. Committee in 1867: "The steam F. engines cost almost nothing to work at fires, whereas the manuals cost 28*s.* per hour, and the same sum if they only work five minutes."

Mr. Wm. Bridges Adams, C.E., says: "As long as combustible buildings shall continue, there can be no question that the steam F. engine is the best; and if rightly constructed, the steam can be got up as rapidly as the horsing, and water connecting, and other arrangements. . . . Water in force is more effective than when merely poured upon a fire; and the force and volume of water thrown from a steam F. engine will always do the work of several hand engines in a far more rapid and effectual manner. At some of the great cotton fires in Liverpool, it was only the *force* of the water which knocked the fire out, not the wetting of the materials."

Herr von der Tak, Director of the Board of Works at Rotterdam, tried a series of experiments with steam and manual F. engines, in order to obtain a comparison of the results and proportions of work done by each. He found that the steamer using four nozzles each attached to the same length of hose as was used with the manual engines, which were worked by a double gang of men, spell and spell, to have the best results, and was just equal in capacity to *five* of the ordinary fire engines used in that city.

A well-designed, well-made, and well-managed steam fire engine should not prove very expensive in maintenance, although it is exposed to two principal causes of deterioration, viz. that which it encounters in being transported to and from the point at which its aid is required, and that caused by the duties it has to perform when at a fire. In proof of this proposition, Mr. Young quotes the experience of the "Torrent" steamer which belonged to the late Lambeth Brigade. It was taken into active service 9 March, 1863, and up to Dec. 31 of that year had attended 88 fires, and run over 211 miles, besides having been used in steam drills 46 times, and been 130 hours at work. During the whole of that time no expense whatever had been incurred for repairs. The engine was in regular and constant use during the whole of 1864, both at fires and drills, and was taken to Hastings, Coventry, and various parts of England, where it was worked well to show its capabilities; and all the expense for repairs from wear and tear was £20!

FIRE ENGINES, STEAM, SELF-PROPELLING.—It had been constantly urged as one of the objections to the early steam F. engines produced in Europe, that their great weight was a serious drawback, inasmuch as they could not from this cause reach the scene of conflagration nearly so promptly as the ordinary manual engines. And no doubt it did seem an anomaly, and a very great one, to witness two or three horses straining their last effort to move forward a large steam engine, with visible manifestations of steam being nearly "up." It remained for an English engineer on American soil to devise and carry out a practical remedy.

1840-1.—The first Self-propelling Steam F. Engine ever constructed was built by Mr. Paul Rapsey Hodge, an English engineer, at his works in New York this year. We have already given some account of it in our notice of American Steam F. Engines in the preceding art. Several of the other early U.S. steam F. engines were also of this class.

1859.—The *Scientific American* for this year gives an account of a newly constructed engine of this class which had run 20 miles on a common road. The whole weight of the engine, water, and 9 passengers was 12,000 lbs.—the weight of the engine alone being 9000 lbs. The first 3 miles were made in 16 minutes, part being up a very heavy grade. The entire time occupied in travelling the 20 miles was 2 hours.

1862.—Mr. W. Roberts (of Brown, Lennox & Co.'s works, Millwall) manufactured a steam self-propelling F. engine this year. It weighed, in working trim, and including 5 cwt. of coal and 40 gals. of water in the tank, 7¾ tons. The boiler held an unusual quantity of water, which caused some delay in getting up the steam. When it got to work, it threw a 1⅜ jet to the top of a chimney 140 ft. high, and afterwards to a horizontal distance of 182 ft., not measuring the broken water and spray which reached 10 ft. or 15 ft. further. The steam was not maintained at an even pressure—a circumstance which required to be remedied. The engine, which was the largest then made in this country, could be applied for hoisting, or for driving machinery.

1864.—The So. of Arts offered one of its medals for the most efficiently constructed "self-propulsion" steam F. engine. There was no immediate competition.

We do not propose to pursue this branch of the subject. We have spoken separately of self-propelling steam F. engines, because they mark an important, although almost a self-evident improvement. There is one drawback to them which has to be kept in view—they are only self-propelling when the steam is up. They are difficult, not to say dangerous of locomotion by horses. In this view it is seen that they are best suited for large cities and towns with efficient fire brigades. Here a certain number of these powerful engines are kept with steam constantly up; and with the guiding finger of one experienced man they will speedily make their way to their work—and do it.

FIRE EPIDEMICS.—In the *Ins. Times* of N. Y. for Dec. 1872, there appeared an art. with this heading. To those familiar with the practice of Ins. this expression represents an idea. It is often observable that large fires occur in very close succession, and continue over a period. We do not mean in regard to any particular class of fires—*that* might arise from peculiar causes to be accounted for and estimated as part of the moral hazard of a particular trade or set of circumstances. There do appear to be epidemics of fires—as unaccountable in their coming and going as other epidemics. It is so in life offices—the mort. in certain years falls upon heavy pol. In accident ins. we have had occasion for many years to mark a species of epidemic—not simply confined to one year, but sometimes operating in a given district: any theory of fraud being quite unable to account for the circumstances. We commend their consideration to the attention of philosophers.

FIRE ESCAPE SO.—An Asso. under this title was founded 1828. We shall give some details concerning it in the art. which follows.

FIRE ESCAPES.—Any machine or apparatus for enabling persons to escape from the upper stories of houses on fire may be designated a F. Escape.

The instinctive dread which all persons entertain, not only in regard to themselves, but equally as to others, of the chance of having life sacrificed from the occurrence of fire, has caused many philanthropic, as well as many ingenious, persons to devote their energies to devising remedies. We had no idea of the extent to which this feeling had operated until, a short time since, in view of the preparation of the present art., we visited the library of the Patent Office in Chancery Lane; and there the accumulated results of philanthropy and genius combined are not only astonishing, but overwhelming. We at once abandoned all hope of completing any enumeration of such contrivances; and fall back upon the notes we have accumulated from other sources.

Brande, in his excellent *Dict. of Science*, etc., says: "The many contrivances which have been proposed for accomplishing this desirable object are of two kinds: the first comprising those by means of which the escape is effected without external aid; and the second, those requiring the assistance of persons from without. Of the first kind, the most advantageous is a rope, which may be kept in a sleeping apartment, and used when needed by fastening one end of it to a window-sill or bedpost. But, unfortunately, contrivances of this kind can rarely be of any use; for supposing them to be at hand when the alarm of danger is given, few persons can command the coolness which is requisite for fixing and adjusting the apparatus, and even then it is only the strong and active who could safely descend by such means from a considerable height. In escapes of the second kind, the object is to enable persons without to estab. a speedy communication with an upper room, so as to afford the inmates the means of safe descent, or to remove them, if necessary, as in the case of the feeble or children."

1766.—David Marie patented a F. escape, of which we have not met with any details.

1773.—Joachim Smith patented a F. escape, of which we are also without particulars.

During the last century the famous Baron Maseres devised a kind of chair of straps, by which a person could lower himself from a window.

1809.—Mr. Davis proposed the use of three ladders, which might draw out like a telescope, and might reach from the ground to the upper windows of a house.

1813.—Mr. Young contrived a sort of rope-ladder with iron rounds of very flexible construction.

1816.—Mr. Braby invented a contrivance in which a pole was the chief part, and down which a chair or cradle would slide, governed by a rope. This is described in vol. 34 of the Trans. of the So. of Arts.

1819.—Mr. J. Gregory patented a F. escape ladder, consisting of sliding sections placed upon a movable carriage, and capable of being extended by the successive drawing out of the separate parts. This appliance became the foundation of the present metropolitan F. escape. (See 1840.)

1820.—Mr. Witty introduced a species of bag or case which might be lowered from the sill of a window by the person in the bag, who had to manage the cords.

1828.—An Asso. under the title of the *Fire Escape So.* was projected and founded in Lond. this year, at the instance of Mr. John Hudson, of Cheapside, who, struck with the inefficiency of the system of parish ladders, which prior to that period were the only appliances for rescuing persons from burning houses, and which too often were not available at the moment required, agitated for more ample means of protection, and succeeded in the estab. of this So., which in 1836 merged into the *Royal Society for the Protection of Life from Fire.*

1830.—Mr. Braidwood, then Master of the Edinburgh F. Engines, pub. a work on Fire Engines, Firemen, etc., wherein he pays some attention to the important subject of saving life from fire by means of fire escapes, etc. He suggests that in certain cases the breaking through the party-wall from the joining house—taking care to have the breach repaired immediately its purpose has been served—is a very safe and expeditious way of rescuing those who are cut off from escape by the stair. He then passes on to review the ordinary method by the use of fire escapes, regarding which he says:

> Many machines have been constructed for the purpose of facilitating escape from buildings on fire.

> I have seen a considerable number of these machines, and have heard many others described: but one or other of two great and insuperable objections applied to most of them—they were either so unwieldy, that they could not be moved with the necessary celerity, or required such a length of time to erect, that the occasion for them was over before they could be used. I remember, in one instance, it was proposed to erect a scaffolding in front of the house from which the people were to be removed; but unless the house were built of cast iron, it appeared to me that it must have been burned to the ground before this unwieldy structure could be brought to the place and erected. As a recommendation of this apparatus, it was stated that it would be no more than two tons weight! . . .
>
> Any F. escape to be generally useful must in the first place be capable of being carried about without incumbering the F. engine; and in the next place, must be of instant and simple application. The means which appear to me to possess these qualifications in the highest degree, is a combination of the cradle plan, with Capt. Manby's admirable invention for saving shipwrecked seamen.

He proceeds to describe the method here referred to, of which we assume he was the originator:

> The apparatus necessary for this F. escape is a chain ladder 80 ft. long, a single chain or rope of the same length as the ladder, a canvas bag, a strong steel crossbow, and a fine cord of the very best workmanship and materials 130 feet long, with a lead bullet of 3 oz. weight attached to one end, and carefully wound upon a wooden cone 7 inches high and 7 inches broad at the base, turned with a spiral groove, to prevent the cord slipping when wound upon it, and also a small pulley with a claw attached to it, and a cord reeved through it of sufficient strength to bear the weight of the ladder. In order to prevent the sides of the ladder from collapsing, the steps are made of iron or copper tube, fastened by a piece of cord passed through the tube into the links of the chain, till the tube is filled. The steps thus fastened are tied to the chain with No. 14 copper wire, so that in the event of the cord being destroyed, the steps will be retained in their places by the wire. The ladder is provided with two large hooks at one end [plates are given in the work] for the purpose of fixing it to the roof, window-sole, etc. The bag is of No. 3 canvas, 3 ft. wide and 4 ft. deep, with cords sewed round the bottom and meeting at the top, where they are turned over an iron thimble at each side of the mouth of the bag. The steel crossbow is of the ordinary description, of sufficient strength to throw the lead bullet with the cord attached 120 ft. high.
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> When the house from which the persons in danger are to be extricated is so situated that the firemen can get on the roof by passing along the tops of the adjoining houses, they will carry up the chain ladder with them, and drop it over the window where the inmates show themselves, fastening the hooks at the same time securely in the roof. The firemen will descend by the ladder into the window, and putting the persons to be removed into the bag, lower them down into the street by the single chain. If the flames are issuing from the windows below, the bag, when filled, is easily drawn aside into the window of the adjoining house by means of a guy or guide rope.
>
> If the house on fire stand by itself, or if access cannot be made to the roof by means of the adjoining houses, the lead bullet with the cord attached is thrown over the house by means of the crossbow; to this cord a stronger one is attached, and drawn over the house by means of the former; a single chain is then attached, and drawn over in like manner; and to this last is attached the chain ladder, which, on being raised to the roof, the firemen ascend, and proceed as before directed.
>
> If the house be so high that the cord cannot be thrown over far enough to be taken hold of by those on the opposite side, then the persons to be extricated must take hold of the cord as it hangs past the window at which they may have placed themselves. By means of it they draw up the small pulley, and hook it on the window-sole. The chain ladder is then made fast to the end of the cord, and drawn up by those below. When the end of the chain ladder comes to the sole of the window, the persons inside fasten the hooks of the ladder on its sole, or on the post of a bed, or the bars of a grate, or anything likely to afford a sufficient hold. After having ascertained that the ladder is properly fixed, the firemen will ascend, and proceed as in former cases.

It will be remembered that this was the plan of a man practically engaged in the business of rescuing lives from fire. He adds: "I must here remark, that before this plan can be properly put in execution, the firemen must be regularly trained to the exercise."

1833.—Under the Lighting and Watching Act of this year (3 & 4 Wm. IV. c. 90), applicable to the whole of Eng. and W., there appeared to be power (under sec. 39) for the providing of F. escapes in any parish or place brought within the provisions of the Act. (See 1865.)

1835.—Mr. Ford recommended the use of a spar of timber about 35 ft. or 40 ft. long, having two projecting arms at the top, furnished with prongs, by which a firm bearing against the wall of the house was to be obtained. A grooved pulley was morticed into the spar near the top, and another near the bottom; over the pulleys ran an endless rope, to which was attached at one point a main rope, and at another the semicircular brace of a large grooved roller, which traversed up and down the space between the pulleys. This brace was carried on a spar or hook, to which a cradle was attached, by which persons might be easily lowered to the ground.

1836.—The *Royal So. for the Protection of Life from Fire* was founded this year, and made the providing of F. escapes in Lond. a special feature of its operations. The *Fire Escape So.* founded 1828 merged into this So. (See 1843.)

1840.—A Rep. was presented to the Corp. of Lond. by the Commissioners of Police, descriptive of 30 plans for F. escapes which had been proposed by different parties. They were of three classes: 1. Machines intended for domestic use only, to be resorted to by the inmates of houses in case of fire. 2. Machines to be used from the outside, and made to combine the security of property with the protection of persons. 3. Machines exclusively for the protection of life from fire, to be used out of doors, under the responsible protection of the police. Among these were several of the machines already noticed. It was considered that the common fire ladders carried by the Lond. F. Brigade were most generally useful in courts and confined situations. The best for streets and wide spaces was left an open question.

Same year Messrs. Harvey and Braidwood recommended for use in the City of Lond. a F. escape which was founded on Gregory's invention (1819), and which contained some valuable additions and improvements designed by Mr. Wivell, an artist. The principal of these was the addition of a long canvas trough, extending the whole length of the main ladder, and intended not only to facilitate the descent of weak and timid people, but also to protect them from the heat of issuing flames. But this part of the contrivance itself not unfrequently requires protection. In the drawings of some very early F. escapes, we have seen the canvas appliance in another form.

1843.—The Royal So. for the Protection of Life from Fire (founded 1836) was re-organized this year. It then had six F. escape stations in Lond.

1857.—The Royal So. for Protection of Life from Fire had at this date 67 F. escape stations in Lond. Up to the close of 1858 its escapes had attended 504 fires, and 57 persons had been rescued.

1858.—A suggestion was made that it would be a good plan if in every house was kept a strong board with a hand-rail, and a hook at each end; by hanging one end outside the window of a burning house, and the other to the window of the adjoining house, a temporary bridge or balcony might be formed. Did the proposer ever trust himself on such a contrivance? What would the accident ins. cos. say?

About the same time a suggestion was made that each street or group of houses should possess a wire basket; that there should be a bracket fixed at the top of every house front, projecting 2 ft.; and that the police should be provided with some kind of rocket to send the rope over the bracket, and thereby haul up the basket. Probably a twin-brother of the preceding!

Mr. Meakin proposed to fix 2 wire ropes to strong hooks in the front wall of a house; to raise a kind of cradle on these ropes by means of pulleys; and then to govern the descent of the same cradle by the same ropes and pulleys. In the case of a large house with several stories, and many windows, where should the hooks be placed?

1863.—In an art. in the *Companion to the British Almanack* this year on *Fires and Fire Brigades at Home and Abroad*, occurs the following passage:

> The F. escape system in Lond. is a remarkable one, depending neither on the Gov., the local authorities, nor the ins. cos. It is wholly voluntary and benevolent, intended to save life from fire without any other reward than the satisfaction of so doing. . . . After many kinds of F. escape had been invented, the So. fixed upon that which is now so well known in the streets of the metropolis—a long ladder on a wheel carriage, with apparatus for bringing down persons from the upper windows of a burning house in a canvas shaft or trunk. The So. has about 80 of these escapes, managed by rather more than an equal number of men. The escapes are placed as nearly as can be half a mile apart all over the metropolis, in localities known to the police; and at night one man is always in attendance with each escape. The parishes and the ins. cos. nearly all voluntarily subs. to the So.; and the F. brigade and the police act in harmony with the escape men whenever the services of the latter are needed. The escapes extend over an area of 8 miles from east to west, and 6 from north to south, with the Royal Exchange pretty nearly in the centre.

The Act 28 & 29 Vict. c. 90 repealed in part the Act of 1833, but made a special exception in favour of maintaining F. escapes in any parish in which they had been provided under that Act, unless and until the new board should purchase such orig. F. escape or provide others. (See 1867.)

Those who are desirous of knowing more of the details of many of the early F. escape appliances may with advantage consult the *Mechanic's Mag.* for Jan. and July of this year; also July 22, 1864.

1865—Mr. G. B. Galloway read before the Brit. Asso. a paper: *On the Means of Saving Life from Buildings which may be on Fire.* No abstract of this paper appears in the *Trans.*

1866.—The Royal So. for Protecting Life from Fire in Lond. had at this date 85 F. escape stations. The escapes had attended 695 fires, and 78 lives had been saved. In Aug. of the following year the plant, etc., passed over to the Metropolitan Board of Works under the provisions of the F. Brigade Act, 1865.

1867.—Under the Poor Law Amendment Act, 1867—30 & 31 Vict. c. 106, sec. 29—power is given to the vestry of any parish not being a town council, local board, or other competent authority, to provide (*inter alia*) a F. escape "for general use in the parish," and also to provide for its maintenance, repair, and the securing a proper place to keep the same, out of the poor-rates.

The Parl. Committee which sat this year on Fire Protection took some evidence in regard to the F. escape service, but made no recommendation thereon, prob. because the escapes passed over to the control of the Metropolitan Board of Works while the Committee was sitting. It transpired in evidence that the escape men were provided with patent respirators, but very rarely wore them on account of the trouble of properly adjusting them. [FIRE RESPIRATORS.]

1870.—Several fires occurring this year in which some lives were lost and others jeopardized, again caused attention to be drawn to the necessity for domestic F. escapes. Major Wethered introduced one which attracted attention. The apparatus consisted of a single length of rope, about half an inch in diameter, capable of bearing a breaking strain of from 10 to 15 cwt. This rope was readily affixed to the upper sash of a window, or to a hook specially provided in the external wall. Being thus suspended, at a convenient height above the sill of the window from which it is desired to descend, the running out of the rope is perfectly regulated by passing in a zig-zag course through a compound block carrying a self-acting break and a lever-handle for releasing it. The person about to lower himself puts over his shoulders a sack loop, which he hooks on to the break, and then lets himself out. His weight at once causes the break to nip the rope, so that he remains securely suspended. A slight pressure on the lever frees the break and allows the rope to slide through the block, the degree of speed of descent being thus completely under control. If it be desired to lower other persons of a family, the block itself can be suspended as an ordinary pulley, the tortuous course of the rope enabling the heaviest person to be lowered most easily. The whole apparatus, with its rope attached, could be put in an ordinary small hand-bag, is in no way liable to get out of order, and in cost will probably not exceed £1 or £1 10*s*.

Major Wethered in a letter to the *Times* at a later date said of the ordinary F. escapes:

> These machines cannot be used in narrow lanes or alleys, or in those cases where a wall or strong railing incloses the frontage. Neither can they be conveniently or safely used beyond the distance the canvas shoot will reach, about 30 feet; above that height the fly ladder has to be resorted to, and carrying a person down a ladder of that sort appears to be a most hazardous and primitive proceeding. When the fireman has ascended that height, it would surely be more simple and expeditious to lower by rope and pulley.

1871.—The Metropolitan Board of Works advertised for tenders from persons willing to construct and supply 20 new fire escapes p.a.; and to keep in repair their existing escapes.

Mr. James Hayman, of Kennington Road, invented an apparatus "by means of which persons may with safety and without loss of time be taken out of the windows of the house on fire, and drawn in front of the parallel window of one of the adjoining houses, and either admitted therein or let down to the ground in front thereof without coming in contact with the flames. It may also be used at the back of the premises."

1872.—Mr. Bayley, wheel manufacturer, Newington Causeway, devised a new F. escape. Instead of the canvas shoot, he had one constructed of copper wire network. This offering less resistance to the wind, enabled the machine to pass along the streets more rapidly. The shoot too was incombustible, and would bear any weight. It was tested up to 1 ton p. ft. The ladders were all hinged, or trussed in such a manner as to bear a greater strain than it was considered would ever fall upon them. There was another simple appliance for throwing up the ladders with ease. Capt. Shaw and several officers of the Metropolitan Board attended, when the machine was put to many tests, the results of which were regarded as satisfactory.

In the U.S. this year Dr. H. Marshall exhibited what was described in the report of Col. Burnett, Sec. of Georgia State Fair, as a very simple and efficient apparatus, by which persons in the upper stories of the highest buildings can, with perfect safety and most readily, go out at the window and descend to the ground, when the building below is all on fire, and escape otherwise be impossible. One of the Doctor's sons, 17 years of age, well grown, made a dozen descents from the upper window of the highest of the halls on the ground, which was witnessed by great numbers. He adds: "The contrivance is so simple that any lady, however inexperienced, can quickly and successfully use it; and so cheap that every hotel in the country and every family residing in houses three stories high can afford to keep one in every up-stairs room; and every traveller can carry one with him in his trunk—the cost being only 5 dols."

1873.—Mr. J. Scott, of Newton Road, Westbourne Grove, patented an ingenious machine, which admits of rapid and easy escape to the street in case of a sudden alarm of fire. The inventor claims for it many advantages, among which is its superiority over the public escapes, as the machine can be conveniently stowed under a bed, and occupies no more space than is covered by a moderately sized box. The machine is a flexible canvas shoot, strongly fixed to an iron rim, which forms its mouth, and is so adjusted as to admit of ready access to the bag. A strong iron stanchion, adjusted to the rim, admits of its being fixed to a window; the shoot is then allowed to gently drop, and is seized by some one outside. The person descending has merely to stretch knees and elbows out, by which means the rapidity of transit can be regulated, and in a few seconds he is deposited safely on the ground. In case excess of nervousness should prevent any one from following the inventor's directions, a too rapid descent can be prevented by the person at the bottom of the shoot twisting it for some distance, and gradually unfolding the twist as the occupant descends. A circular issued by the inventor states that the family escape "can be used effectually in a quarter of a minute." The difficulty seems about the "man at the bottom." Here however is the result of some experiments with it at a later date:

The machine was fixed to the window in less than a quarter of a minute by the hands of one person, who instantly descended in it to the ground without any help, and then laid hold of the long flexible shoot, which forms part of the machine, and pulled it out into the middle of the road, where he held it firmly at a distance of 25 ft. from the house, and thus formed an easy incline for the rest of the inmates to slide down inside the shoot. All this, including the fixing at the top and his own descent, occupied only half a minute; and when he called out "All right!" the inmates began to pour down the shoot in such rapid succession, that 20 persons passed through in a minute and a half. The proprietor of the house then gave permission to volunteers to go upstairs in batches of about 20 each, and more than 200 men, women, and children, who had never used the machine before, went down it without hesitation, some stopped themselves half way down, others darted through the shoot in two seconds of time, but all arrived on their feet in safety. Some carried parcels, others carried their dogs with them, and some were children so small that they had to be lifted up and put into the shoot by other persons. A person weighing 17 stone came down the shoot with ease in 3 seconds.

1874.—The Metropolitan Board of Works announced that it would be prepared to receive and consider any practical suggestions for improvements in the F. escapes now in use by the brigade, which any person may have to offer, especially with regard to the height which the machine can be made to reach without delay." We are glad to observe that the "canvas shoots" are rapidly being replaced by some less combustible material.

Mr. J. Hicks, an officer in the Coastguard Service, and inventor of a useful life raft, has invented a F. escape. The following is the description which appeared in the *Times*: The escape requires, in the first place, a pair of short chains to be fixed on either side of the window, just inside, out of the way and all but out of sight. These chains have the one a hook and the other an eye, and when required for use are linked together across the window. Into the eye of the chain the main block of the escape is hooked, the escape when not in use being stowed away in a box measuring only 2 ft. long, 20 in. broad, and 8 in. deep, which in a bedroom can easily be stowed away under a dressing-table in or near the window. The escape itself consists of a cage or square-mouthed bag of strong netting, held open by a light iron rim. A light rope is attached to it, and passes through the fixed block hooked on to the window chain. The rope is also rove through a moveable friction block fitted with a brake, which is self-acting and is very simply arranged. The cage being hooked on to the cross chain, it is pushed outside the window, and the coil of rope connected with it is thrown into the street. A light guy-rope attached to the cage is also thrown to the bystanders or firemen below, and by this rope the cage can be pulled away from the house clear of balconies or other impediments to descent, and clear also of any flames that may be issuing from the lower windows. As soon as the cage is clear of the window-sill, the person seeking escape gets into it, or places others in it first in the case of women and children. The brake sustains the cradle in its normal position until it is loaded, when it slowly descends to the street level. If it should be necessary to stop it on the way down, a very slight pressure by the person in it on the lowering rope effects the object. The cage is then hoisted up again from below for a fresh load, and, if required, a man can be raised in it. If it is desired to lower the cage very rapidly, the lowering rope is slipped out of the brake-hook, and the descent with several persons can be effected in very much less time and with equal safety. Hicks's escape can be used not only from a window, but from a roof.

A fire escape of improved construction, the ladders being higher and the circumference of the wheels greater than those previously in use, has been at work in Lond. It was built by Messrs. Clayton, of Dublin; Irish oak being employed in its manufacture.

Messrs. Kitson & Naylor, of Halifax, Yorks, invented and patented a new, novel, and what seems to be an effective F. escape The escape is on the telescope principle, and varies in length from 15 to 35 ft., having two slides. It is tubular in form, the interior varying in width from 2 ft. to 2 ft. 8 in., the joints or slides being so bevilled that no shock can possibly be felt by those who are being let down. The tube is constructed of galvanized iron, there being nothing about it that can possibly catch fire. At the top is a grapnel to hook on to a window ledge or other projection of a building, and which also forms a gangway or ladder with which to reach the tube, around the top of which is a handrail for the protection of people until they are taken inside the tube. The mode of lowering people down is novel: an endless chain passes down inside the tube, revolving round cogged pulleys, to the shaft of which is attached a powerful brake with lever, so that the action of the chain can be stopped at any position. Every 5 ft. along this chain are wire gratings, upon which the persons to be rescued take up their positions, and are thus let down in separate compartments, by which means 10 persons can be passing down the tube at the same time, or even 20 on a pinch, by placing two in each compartment, which, in the case of children, could easily be done. Another great advantage of the escape is, that by reversing the machinery, a man can be pushed up to the top of the building. This is a useful feature, because in many cases the services of an experienced fireman at the top would be almost invaluable in preventing unnecessary rushing and guiding people to their places. The escape will stand on a platform about 4 ft. high, having steps on each side, and be moved on two wheels. The handle by which it is drawn along can be closed in right under the machine, and the tube, after being elevated to the required altitude and angle, is supported by two legs, which slide into each other and fix firm at any point. The machine is very ingeniously contrived, and worthy the attention of all interested in these matters. When not in use, it takes up a space of about one-third of its total length, and can therefore be stowed away in a convenient compass. This is a step in the right direction.

At the close of 1874 the number of F. escapes in the metropolis was 129.

In the U. S. during this year various practical improvements were announced. There the F. escapes are all combined with F. extinguishing apparatus.

1875.—The Jenks-Richard's Fireman's Escape is announced from the U. S. We learn the following details:—"Its leading characteristic is that of a wire ladder, with wrought-iron cross-bars, wound upon a reel overhanging the building, on a line with, and concealed by the cornice, and which may be lowered at the very moment an alarm is given. The reel is fastened to a strong iron frame work extending some distance back upon the roof, and its motion is so perfectly regulated by a simple governor, that the ladder will not descend with a rush, but only at a given rate of speed." "It affords an instantaneous and always available means for the fire department to reach the upper stories and roofs of buildings from the outside, and a complete and efficient instrument for raising hose to any desired floor or roof in less than half a minute; and they regard it a most valuable auxiliary for extinguishing fires in individual buildings, and for fighting fires in the case of general or extensive conflagrations."

As a means of saving life, when firemen or occupants of buildings may be unable to descend interior stairs, this invention is considered of the utmost value and importance. It may be added that the hose is hoisted to the roof or upper floors as desired by horse-power, the hoisting tackle being so arranged that one end of a wire rope which passes over a pulley at the roof is fastened to the hose, while the other is attached to the cart, and while the horses walk away from the burning building, the hose ascends to the roof as it is unwound from the reel. This arrangement saves the firemen an immense amount of very fatiguing labour in lugging hose up tortuous stairways, and leaves them fresh for work when their services are most needed. The ladder also affords them a ready means of access to the roof, and remains a sure avenue of escape as long as the wall to which it is attached stands. Another advantage afforded is, that it saves dragging hose over sharp cornices, which is both a slow and very fatiguing operation for firemen, and very destructive to the hose itself.

Of this class of brigade machines the Skinner Hook and Ladder Truck and F. Escape combined appears to us to offer advantages of a very superior character. For many of the European cities its services would be invaluable. It is difficult to explain the machine without a drawing of it to aid. It consists of a hook and ladder truck, with F. escape attached, and carries long self-supporting ladders from 60 to 90 ft. for saving life from burning buildings, and also for elevating the hose, so that the firemen may play direct on the fire, and to place the ladder far enough from the building so that the pipemen will not be exposed to the intensity of the flames and smoke, and the danger of falling walls. This truck also carries the full set of ladders and other equipments of the ordinary truck. The main ladder forms the body of the truck, and is attached to the fifth wheel on hind part of the truck, the shorter ladders being carried on the top of the main ladder. If the F. escape ladder is required to be used immediately on the arrival at a fire, the raising of it will unship the shorter ladders and cause them to roll off out of the way. The operation of the machine is simple: the turning of a crank by two men will raise the ladder in less than two minutes to any height or any angle required. The truck can be run with the ladder in nearly an upright position, enabling the firemen to move it about quickly, without lowering it; or it can be placed to any window of a house, entirely overcoming the formidable obstructions caused by awning frames, telegraph wires, trees, etc.

Mr. James A. Neville, a Port Huron inventor, is reported to be at work on a windlass and an extension F. escape ladder, with which he "proposes to shoot 20 firemen 60 feet into the air by the strength of one man's arm, within a minute's time, or thereabouts."

The *Hartford Post*, U. S., claims that a new elevator and F. escape invented by Mr. McClunie, of that city, is the best in the world. The model consists of five separate stories, each of which is surrounded by a balcony. These stories slide into each other, in the same way in which a telescope shuts, the lower one, and of course the largest of the set, fitting into a heavy base, and the others shutting down completely into that—the whole looking like a nest of boxes frequently seen in the spice stores. The smaller and inside story, which is the highest when the machine is elevated, is surmounted by a turn-table, on which is placed a metal inclosure, in which operates, by means of wheels and pulleys, a long narrow sliding box or gangway, which will reach from the escape across the broadest side-walk, and into any window or door in the burning building which it may be desired to reach. The arrangement for hoisting is such that the machine can be hoisted from the top or the bottom to a height of 60 ft. by one man in one minute.—*Ins. Monitor.*

A few years since one of the Lond. F. Escape men trained a favourite dog until the animal thoroughly comprehended the duties which his master had to discharge, and the dangers which he had to run. The noble brute was never far from his master's side when on duty; and was not unfrequently the first to discover smothering inmates in burning premises, and to drag them to the windows to be taken down the escapes. He was finally run over and killed by a F. escape, which was regarded as a calamity in the district of his operations.

1876.—Among the instruments and apparatus to be exhibited at the International Public Health Congress and Exhibition at Brussels in 1876, there stands in the first class those intended for "delivery from fire."

FIRE EXPLOSIONS.—A term employed to designate explosions resulting from combustion, as in a flour-mill, from gas explosions, and boiler explosions. [EXPLOSIONS.]

FIRE EXTINGUISHMENT.—Under this head we propose to review in some detail the various appliances, mechanical and otherwise, which have been from time to time used and suggested in regard to the extinguishment of fires; as also the various legal requirements, and recommendations, in the same direction. The reader will soon discover that there exists great diversity of opinion among different people, and in different countries, regarding the means which are really best; and it will occur to him that the differing circumstances of towns in regard to situation, staple trade, general nature of fires in the past, and various other peculiarities, go to explain in some degree at least the different views and practices. The events of the last few years have added great point and importance to the subjects here discussed; as they have also done much to hasten forward appliances and suggestions of the utmost value.

The reader will keep in view our art. FIRE ANNIHILATORS; and FIRE BRIGADES; while a yet wider view of the whole question will be taken under FIRE PROTECTION.

The true key to Fire Extinguishment, whatever the available appliances may be, is to be discovered in promptness of action—

A little fire is quickly trodden out,
Which being suffered, rivers cannot quench.

When Rome was rebuilt nearly four centuries before the commencement of the Christian era [B.C. 387], every citizen was required to keep in his house a "machine for extinguishing fire;" but what those machines were we do not precisely learn. We know that among the appliances then existing were buckets, mops, hooks, and syringes; and it has been deemed reasonable to suppose they were these latter. There seems ground for believing that the syringes were generally regulated by the size of the buildings in which they were to be used. Of some of the fire appliances in use a few centuries later we speak under FIRE ENGINES.

Pliny the younger, who lived in the first century after Christ, and was governor of Bithynia, wrote to the Emperor Trajan asking permission to estab. a F. brigade of 150 men, into which he proposed to admit only those of that business; and we find him stating that the town of Nicomedia was nearly destroyed by fire owing to the violence of the wind, and partly to the indolence of the people, who it appears stood fixed and idle spectators of this terrible calamity. "The truth is," he adds, "the city was not furnished with either engines, buckets, or any single instrument proper to extinguish fires, which I have now, however, ordered to be provided." [FIRE ENGINES.]

It seems that besides engines for throwing water on fires, the Romans used sponges or mops attached to the end of long poles; and grapples and other instruments, by means of which they could go from one wall to another.—*Young*.

1371.—The first police regulation on the subject of fires in *Paris* dates from this year. It required each householder to put a hogshead of water at his door, under a penalty of 10 sous. (See 1524.)

1524.—A police ordin. of this year required each inhabitant of *Paris* to keep watch after 9 o'clock at night at certain places appointed; to put a lantern with a lighted candle in the window; and to provide a supply of water. (See 1371 and 1670.)

1564.—In the rare work *De re Metallica* of Rodolphus Agricola, pub. this year, there is a drawing showing a complete set of Fire Extinguishing apparatus at this period. There is a syringe, a sledge hammer, two fire hooks or preventors, and three leather buckets, conveniently arranged against a wall. The syringe was made of brass. [FIRE ENGINES, HAND.]

1582.—It is related that when Maurice, who put up the waterworks at London Bridge, had in this year completed his job, the Mayor and Aldermen, after seeing them work, were not a little astonished to see the way in which he threw the water. Stow says, "And they saw him throw the water over St. Magnus' Steeple, before which time no such thing was known in England as this raising of water." This we assume was accomplished simply by the pressure of the water pumped up into the reservoirs.

1590.—About this date hand engines in the shape of fire squirts were introduced into England. [FIRE ENGINES, HAND.]

1633.—The first notice we have of the introduction of manual fire engines into Lond. occurred this year. [F. ENGINES, MANUAL.]

1666.—The Great Fire of Lond. which occurred this year was the means of drawing considerable attention to the question of fire extinguishment. What immediately resulted we have spoken of under FIRE BRIGADES; some collateral incidents are referred to under FIRE ENGINES; but the subject will be dealt with more in detail under FIRE PROTECTION.

Whether explosives had been previously employed as a means of preventing the spread of fire, by the destruction of adjacent buildings, and thus securing the isolation of the burning district, we do not know. But that gunpowder was so employed on this occasion we do know as a matter of certainty. The *London Gazette*, "from Monday, September 3, to Monday, September 10, 1666," pub. by authority, gives an account of the fire, and therein occurs the following para.:

> On Thursday by the blessing of God it [the fire] was wholly beat down and extinguished. But so as that evening it unhappily burst out again afresh at the Temple, by the falling of some sparks (as is supposed) upon a pile of wooden buildings: but His Royal Highness [the King] who watched there that whole night in person, by the great labours and diligence used, ***and especially by applying powder to blow up the houses about it***, before day most happily mastered it.

1670.—An Ordin. by the Lieutenant of Police of Paris this year required all buckets and other vessels for extinguishing fires to be left with various specified local authorities, for use by the members of an incipient F. brigade inrolled under the same Ordin. (See 1524 and 1722.)

1680.—The fire offices at a very early date found the necessity of estab. F. brigades for their own protection in regard to restricting the damages occasioned by fire by their prompt extinguishment. In a pamph.: *Arguments for Insuring Houses from Fire*, pub. this year—we suspect by the founders of the *Phœnix* F. (No. 1)—there occurs the following passage:

> If the office could have supported itself under those many losses, when they gave no assistance to the extinguishing and preventing of fires, it may be reasonably supposed to subsist under future casualties, when it is assisted by the contrivance and industry of a company of men versed and experienced in the extinguishing and preventing of the fire. What advantage that may be is best guest by considering what old and experienced soldiers are able to perform in respect of a tumult, and raw inexperienced men.

1707.—In the 6th year of Queen Anne (6 Anne c. 58), it was enacted that each parish should keep a large engine and a hand engine, and a leathern pipe and socket of the same size as the plug of the firecock (of the water main), to the intent that the socket may be put into the pipe to convey the water clear to the engine under a penalty of £10. And further that in case of a fire the first person who arrived with a parish engine to extinguish it was to be entitled to 30*s.* reward, the second 20*s.*, and the third 10*s.*, provided the engines were in good order, "with a socket or hose, or leather pipe."

1708.—By 7 Anne, c. 17, it was enacted, that the parishes united after the Fire of 1666 should be taken as one parish for the purposes of the last-named Act; that the vestries might order more than one large engine to be kept by their parishes; and that the rewards to be paid to keepers of F. engines might be paid to others than the keepers of parish engines—this being clearly in view of encouraging the keepers of the engines of the fire ins. offices. The provisions of this and some of the preceding Acts in regard to regulations for building will be given under FIRE PROTECTION.

1715.—On the occurrence of a fire on the 13th Jan. this year at Wapping, by which 150 houses were burnt and 50 lives lost, a merchant, writing from Amsterdam, makes certain remarks which bear rather hardly on the system of F. extinguishment which then existed in the metropolis:

> 'Twas a terrible calamity, and a prodigious loss; but it seems strange to me that its fury could not be sooner stopt. The high wind you say drove it on, and the fuel, which was the crowded goods in the warehouses, made the flame too large to be approached. 'Tis true those were circumstances administered much to the extent of the calamity, but perhaps there was a want of orderly application to the proper means of putting an end to it; which I cannot forbear believing to be the case, from the knowledge I have of the great confusion and impertinent crowd there always is at a fire in London: nobody governs, nobody will obey, very few will work, and the many, the very many, only look on and incumber the ground to the hindrance of all that would work. A friend of mine, that lives near enough to the place to be in danger of the fire, tells me that even to his house the crowd filled up the street, and all the passages to Thames Street (*where the fire broke out*) were at that time so filled up that it was next to impossible to get into it: judge if this must not interrupt all business. I am amazed that the English, who are a wise and thoughtful nation, and that London, the most polite part of England, should so often suffer by this calamity, without even entering into the proper method to cure it. I dare not prescribe to you the methods used in this phlegmatick nation, because I know the little opinion you have of us; but whether you ever think fit to imitate or not, give me leave at least to tell you by what means we hinder a fire making any progress among us.

The regulations which he gives have already been set forth in our art. AMSTERDAM.

The practice of using gunpowder for destroying houses as a means of limiting the extent of conflagrations was probably very general at this period. The poet Gay, in his *Trivia, or the Art of Walking the Streets*, written 1715, gives us the following:

> "Hark! the drum thunders; far, ye crowds, retire;
> Behold the ready match is tipt with fire;
> The nitrous store is laid; the smutty train
> With running blaze awakes the barrelled grain.
> Flames sudden wrap the walls; with sullen sound
> The shattered pile sinks on the smoky ground."—*Book III.*

1716.—The importance with which the F. offices regarded measures for F. extinguishment may be seen from the following adv. pub. 15th Dec. 1716:

> The Directors of the *Hand-in-Hand* Office for houses, and of the *Union* Office for goods, do give notice that in discharge of the trust reposed in them they think themselves obliged to prosecute all such churchwardens and others concerned as have not provided and kept fit for use engines, firecocks, plugs, etc., pursuant to the Acts of the 6th & 7th of her late Majesty Queen Anne, for the better preventing mischiefs happening by fire; and will give all fitting encouragement to such persons who shall discover any defaulters therein. They also promise a reward of £50 to such who shall discover any wilful and unlawful practices by which any of the late fires were occasioned, so as the person or persons offending therein may be convicted of the same. In relation whereto application may be made to any one director or to the head clerk of either of the said offices. (See 1720.)

1718.—There was issued a printed document: *The Case of the Inhabitants of the Cities of London and Westminster, and of the Parishes within the Bills of Mort., with Respect to Laws now in Force for Preventing Mischiefs that may Happen by Fire.* This we shall deal with under FIRE PREVENTION, this date.

1720.—The adv. in 1716 had been productive, as may be seen by a further adv. in the *Daily Courant*, 28 July this year, from the directors of the *Hand-in-Hand*, whereby they gave notice that they had paid a reward of 40*s.* to Mr. Wm. Smith of Blackfriars, for his prosecution of the Churchwardens of St. John Baptist, and St. Antholin's, as defaulters upon an Act of Parl. made, etc., which provides that in default of making, placing, fixing, and continuing such stop-blocks or firecocks on the several mains and pipes, as also in default of having and keeping in good repair such large engine, hand engine, leather pipe and socket as the said Act requires, etc. "And they are ready to give the same reward of 40*s.* to any person who shall convict any churchwardens upon the said Act."

1721.—Dr. Hales made some experiments in preventing the spread of fire, and aiding in its extinguishment. His plan was to cover the floors of the adjoining houses with earth. (See 1748.)

1722.—*Paris* was supplied with 30 F. engines, and a regularly constituted F. brigade.

1748.—Dr. Hales proposed to check the progress of fire by covering the floors of the adjoining houses with earth. The proposal was founded on an experiment which he made with fir board, half an inch thick, part of which he covered with an inch depth of damp garden mould, and then lighted a *fire* on the surface of the mould; though the fire was kept up by blowing, it was two hours before the board was burnt through, and the earth prevented it from flaming. "The thicker the earth is laid on the floors the better;" but Dr. Hales apprehended that an inch would generally be sufficient; and he recommended to lay a deep covering on the stairs, because the fire commonly ascends by them with the greatest velocity.—*Phil. Trans.* for 1748.

1772.—There was enacted the 12 Geo. III. c. 73, which purported to be a Consolidation Act, and re-enacted many of the provisions contained in the Acts already recited; but it was itself repealed 2 years later by the 14 Geo. III. c. 78. This Act contained some stringent provisions regarding fires in chimneys. [FIRE PROTECTION.]

1774.—By the consolidating Act 14 Geo. III. c. 78 it was enacted that: It should and might be lawful to and for the churchwardens of every parish and to and for the overseers of the poor of every precinct or place, not having any churchwarden within the limits aforesaid, and they were respectively required from time to time for ever to make, place, and fix, at the charge of such respective parish, precinct, or place, upon the mains and pipes of any waterworks whatsoever within the limits aforesaid, such and so many stop-blocks of wood, with a wood plug, of such and so many firecocks, to go into each main or pipe, and to be placed at such distances in each and every street or place as such churchwardens or overseers of the poor respectively for the time being should direct. Also that every parish within the limits aforesaid [metropolitan district] should from time to time and at all times, after the 24th June, 1774, have and keep in good order and repair, and in some known and public place within each parish, a large engine, and also a hand engine, to throw up water for the extinguishing of fires; and also should provide, keep, and maintain one leather pipe at least, with a socket of the same size as the plug or fire-cock, and a stand-cock or suction-pipe, to the intent the socket might be put into the pipe to convey the water, without loss, and without the help of buckets, into the engine; and should also have and keep in some known and public place within each parish three or more proper ladders of one, two, and three story high, for assisting persons in houses on fire to escape therefrom; and in default of making, placing, fixing, and continuing such stop-blocks or firecocks in the several mains and pipes, as also in default of having and keeping in good repair such large engine, hand engine, and leathern pipe or pipes, socket and stand-cock, and suction-pipe, and such ladders as aforesaid, every churchwarden of such parish, and every overseer of any such precinct or place not having a churchwarden, making default in all or any of the premises, and being convicted thereof before two of His Majesty's Justices of the Peace for the said City of London, or for the counties of Middlesex or Surrey, or liberty where the same might happen (as the case might be), should forfeit and pay the sum of £10. Also (sec. 85) that upon the breaking out of any fire within the limits aforesaid, all constables and beadles upon notice thereof shall immediately repair to the place where the said fire shall happen, with their staves and other badges of their authority, and shall be aiding and assisting as well in extinguishing the said fire, and *causing people to work at the engines*, and also in preventing goods being stolen; and shall seize and apprehend all ill-disposed persons that they shall find stealing or pilfering from the inhabitants; as also that the said constables and beadles shall give their utmost assistance to help the inhabitants to recover their goods.

1784.—The following device for F. extinguishment appeared in the *Annual Register* for this year; name of proposer not stated:

> From a platform rises an upright pole or mast of such height as may be judged necessary. Up this pole or mast slides a gaft, and along the upright pole and gaft the leathern hose of the engine is conveyed; at the extremity of the gaft the branch of the engine projects; towards this extremity is fixed an iron frame, whence hang two chains, and from them ropes serving to give a horizontal direction to the branch; whilst other ropes running through proper pullies and being thus conveyed down the mast serve also to communicate a vertical motion to it. By this means the branch or nose pipe of the engine is conveyed into the window of any room where the fire more immediately rages, and the effect of the water discharged therefrom applied in the most efficacious manner to the extinguishing it.

1791.—A sheet of instructions was issued for the engineers and firemen employed on the fire-watch in the City. They were of a most clear and explicit character, but are too lengthy to repeat. Each man was to be present at his station by 8 o'clock in the evening, and to remain on duty till 6 o'clock in the morning.

1794.—The experiments of Van Aken, which we have referred to under FIRE ANNIHILATORS, led after they were pub. to the making of some counter-experiments, this year. Dr. Van Marum tried a series of experiments, using in some of them plain water only, and found he could always extinguish a fire "more quickly" than by the mixture described by Van Aken. In a letter to M. Berthollet, he remarks that he found a "very inconsiderable quantity of water, if judiciously directed, would extinguish a very violent fire." He relates that he succeeded in extinguishing a fire in two casks, covered with pitch, the heads of which had been taken out, and when fully ignited, *with only four ounces of water!* He also states, as the result of his experiments, that to extinguish a violent fire with a small quantity of water, the water must be thrown on that part where the fire is strongest, so that the quantity of steam produced, which suppresses the flame, may be the greatest possible; that the water be continued to be thrown on the neighbouring inflamed part as soon as the fire has ceased in that in which the operation was begun, and that all the burning parts be visited in this way as quickly as possible. In operations of this sort, he said, particular attention must be paid to throwing the water in such a way that the entire surface of the burning part shall be wetted and extinguished, and that in such a way that an extinguished part shall never be left between two others which are in flames; and no more water must be thrown on the burning part than is needful to wet the surface.

These experiments were useful in their way, but they bear really very little analogy to fires in actual practice. (See 1797.)

1797.—Brigadier Gen. Sir Samuel Bentham, being then Inspector-Gen. of Naval Works, addressed to the Admiralty, under date the 13th Feb., the "outline of a proposal of a new mode of supplying water to His Majesty's fleet, as well as to the several naval estab. at Portsmouth and elsewhere." The proposal included F. extinguishing works, and contained the following passages:

> Considering the immense losses which have been sustained in consequence of the devastation of repeated fires in H.M.'s Dockyard at Portsmouth, and the high importance therefrom arising of some more effectual means of securing the stores and buildings from such accidents in future; considering also how very ineffectual to the suppressing fire which has already taken place among the inflammable stores in a dockyard any quantity of water must be that can, with the utmost alacrity, and under the most favourable circumstances, be thrown by means of any of the engines used on such occasions, it appears highly expedient that when any steps are taken to procure an ample supply of water for other purposes, so to manage that supply that it shall at the same time afford the best possible security against the ravages of fire.
>
> With this view I would propose that tanks or reservoirs be formed on the tops of some of the highest buildings in the dockyard which are sufficiently strong for the purpose; that pipes of a large diameter be laid from these reservoirs to all parts of the dockyard where buildings of importance are situated, or where ships can lie, the situation of the reservoirs being sufficiently elevated to force the water through these pipes to the greatest height required without any other assistance from engines or manual exertions. These pipes, being buried for their security 2 or 3 ft. under ground, should have branches rising from them wherever they should be thought necessary, and which branches should be prepared for the ready affixture of a hose, like that of an engine hose, only larger.
>
> In case of fire, or on the want of water for any other purpose at any particular spot, all that would then be to be done would be to fix one of the hose prepared for this purpose to the branch nearest the spot in question, and to turn the cock, whereby a quantity of water far beyond what is ever thrown by an engine would be made to issue from the hose, and with a force sufficient to enable it to rise to a height greater than that of any ship afloat, and equal to that of the upper floor of any building in the yard. . . .

This year also Dr. Van Marum tried some further experiments. He prepared a building of dry wood 24 ft. in length, 23 ft. in width, and 14 ft. in height, with two doors on one side, and two windows on the other. The inside of the building was thickly coated with pitch, and covered with twisted straw, wood shavings, and cotton soaked in turpentine. He stated "that very soon after lighting it, the flames, being rendered more brisk by the wind, were everywhere so violent that it was considered by my assistants as impossible to extinguish them. I succeeded, however, after the method above directed, in little more than four minutes, and with five buckets of water, a part of which was wasted by the negligence of my assistants." The experiment was repeated in the same month, and the fire extinguished in three minutes, with less than five gallons of water.

1798.—Herr Von Zach, the celebrated astronomer, pub. an account of the experiments of Dr. Van Marum in a German periodical, *Reich's Anzeijer*, No. 119, for August this year.

1809.—The proposals of the *Albion* F. and L. under date 25 March this year contain the following: "Powerful engines of the most approved construction have been provided to render aid in case of fire; and a corps of firemen of great strength and activity has been appointed, and is maintained at a large expense, to add still further to the public security. The men are distinguished by an uniform of dark green with scarlet facings; and by a silver badge, bearing a figure of *St. George overcoming the Dragon*, as the emblem of the Co." The "Fire" Dragon finally overcame St. George! The Co. retired from this branch of its bus. in 1827. [FIRE BRIGADES.]

1812.—Sir Wm. Congreve obtained a patent for improvements affording security against fire, which consisted in arranging water-pipes in buildings, so that, by turning a cock, all or any portion of the building would be deluged with water. This system has since been largely applied both in this country and in the U. S., where these appliances are designated "Sprinklers." The workshops of the South-Western Railway at Nine Elms were fitted with this appliance at a later date. The contrivance has since been made automatic. (See 1864-5.)

1820.—It was proposed by an energetic promoter during this year to supply every house in Lond. with a machine on wheels containing 10 gallons of water.

1828.—During this year *Salt* was suggested as a ready and superior means of extinguishing fires; and it was proposed that reservoirs should be kept at various suitable places.

1830.—It is an event in the history of F. Extinguishment that the first *Steam* F. engine ever made, and this only in the preceding year, was brought into play at the fire which occurred at the Argyle Rooms on the 5th of Feb. this year, and which might have proved far more serious but for the presence of this new invention; for all the ordinary F. engines became frozen and disabled very early in the progress of the fire. [F. ENGINES, STEAM.]

Mr. James Braidwood, then Master of the Edinburgh F. Engines, pub. a work: *On the Construction of F. Engines and Apparatus, the Training of Firemen, and the Method of Proceeding in Cases of Fire.* After giving much information which we have already noted under FIRE BRIGADES, and other heads, he proceeds to notice various contrivances by which either the director of the branch, or the branch itself, might be elevated to the level of the second or third story windows. He says: "Before describing these, I may be allowed to state, however, that, although these inventions may be exceedingly ingenious, their claims to be considered useful appear to me to rest on a principle entirely wrong. I mean that of throwing water on the fire from the outside of the building; but as these machines have attracted considerable attention, I deem it right to mention them." He then describes the several contrivances. The first, invented by a tradesman at Leith, consisted of three ladders, each 25 ft. long, attached at their tops to a sort of pulpit. When the ladders were properly placed, a sort of triangular stand was formed, with the pulpit at the top, to which access could be obtained by either of the ladders forming the stand. The next was an invention by Mr. Shiels, a confectioner in Edinburgh, and was a triangular stand 40 ft. high, upon which the branch and hose could be elevated, and played into the windows. The third, by Mr. Brown, an architect in Edinburgh, was very much like the second, but with some improvement. After his description, which is minute, and illustrated, he says:

> Independently altogether of a mistaken principle of usefulness, one insuperable objection to all these machines is the difficulty of conveying them with the necessary celerity, and the impossibility of packing them on the engine in such a manner that it may be worked without their being taken off; as it seems to me that every description of apparatus which cannot be conveyed along with the engine is likely to be left behind when most wanted. It is notorious that parish fire ladders are for this reason seldom or never made use of.

Turning to his own view of the more efficient mode of extinguishment, he says:

> Many people object to going inside a building on fire on account of the danger. It ought never to be forgotten that the danger increases with the delay; and that, although at first there may be no danger, if the opportunity is not promptly seized, it may become very considerable. In Edinburgh, where the invariable practice is to enter the building on fire at all hazards, there has, during the last four years, been but one serious accident in consequence: this was occasioned by the falling of a stone stair, by which one of the men had two or three of his ribs broken. Several of the men have at different times fainted or become stupefied from the want of fresh air; but as no one is ever allowed to enter singly, they have been in all cases immediately observed by their comrades, and relieved.
>
> Another objection has been raised in the alleged difficulty of persuading men to risk their lives in this manner for the small consideration which is allowed them. The truth is, that any persuasions I have had occasion to use have generally been on the other side. . . . I do not recollect a single instance during the last four years of the firemen being obliged to retreat after having once gained a position inside. They generally, for a few minutes after having first entered, withdraw for a little on account of the steam, but seldom longer than three or four minutes.

He then offers the following more general observations, which we present in a condensed form: It is now pretty generally admitted that the whole force brought together for the extinguishing of a fire ought to be under the direction and control of one individual. By this means all quarrelling among the firemen about the supply of water, the interest of particular ins. cos., and other matters of detail, is avoided. By having the whole force under the control of one person, he is enabled to form one general plan of operations, to which the whole body is subservient. He considers a system of F. extinguishment might be introduced "suitable to the nation and the age in which we live." Instead of hearing of the "dreadful losses by fire," and the "great exertions" made to extinguish it, all the notice would be, such a place took fire, the engines arrived, and it was extinguished. "It would be useless in me to enter into the details of a plan which I have little hope of ever seeing realized." He did, however, very shortly after, find himself, as the Director of the London Fire Engine Estab., in a position to organize a fairly efficient scheme for F. extinguishment in the metropolis.

His idea at the time he wrote was to have a number of the several parts of F. engines of agreed size always in stock on the plan already described under FIRE ENGINES, MANUAL; but he went further:

> It could be provided that firemen might be enlisted for a term of years. When enlisted, they would be sent to the depôt at head quarters, drilled to the use of the engines, and fully instructed in separating and cleaning the different parts. Here also they could be practised in gymnastic exercises, and generally instructed in everything tending to promote their usefulness as firemen. They could

> thus be sent off to some large towns, and after having seen a little active service, distributed over the country in such parties, as might be deemed necessary for the places they were intended to protect.
>
> The practice of keeping F. engines at noblemen's and gentlemen's seats, and large manufactories in the country, is by no means uncommon, and I have no doubt that many more would supply themselves in this way if they knew where to apply for information in such matters; but the great fault lies in the want of persons of skill and experience to work them when fire occurs. In the way I have mentioned, proprietors and others could have one or more of their workmen instructed in the necessary piece of duty; and I have no doubt that many gentlemen would avail themselves of the means of instructing some of their servants.
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> It will be observed, I do not propose that the firemen who are enlisted, drilled, and instructed in the business, should be sent to the different stations in sufficient numbers to work the engines; this part of the work can be performed by any man accustomed to hard labour, as well as by the most expert fireman, and the local authorities could easily provide men for this purpose. . . .

Finally: "Fire is both a powerful and an insidious enemy, and those whose business it is to attack it will best succeed when they have become skilful and experienced in the use of their arms."

1832.—At the fire at Messrs. Barclay and Perkins' Brewery, 22 May, all the premises were destroyed with the exception of the malt lofts, which contained some £60,000 value of malt. It was reported that the beams on one side of these lofts had caught fire; but that Mr. John Braithwaite with a gallon of water under his arm, and two pint pots in his hands, extinguished these early flames, and so kept the fire in check until more efficient help could be brought. At this fire the first Steam F. engine manufactured was brought into play.

1839.—In the case of *The City Fire Co.* v. *Corlies*, before the Supreme Court of N.Y. 1839, it was *held*, as follows: 1. A loss of goods insured by blowing up a building with gunpowder by order of the municipal authorities, and the subsequent burning of the same, is a loss by fire. 2. Placing gunpowder in a building, for the purpose of immediately blowing it up, is not a "storing" of gunpowder within the prohibition of the pol. 3. A destruction of a building by order of the municipal authorities to arrest a conflagration is not a loss by "usurped power" within the meaning of the pol., even if illegally directed.

1841.—At a serious fire which occurred at the Tower of London this year, it was found that the whole of the F. engines and extinguishing apparatus there, and which belonged to the Imperial Government, were in the most wretched condition.

1844.—On the 31st January experiments were made to ascertain the height that a jet of water would rise from the mains and services belonging to the Southwark Water Co. under a fixed pressure of 120 ft. The first trial was made in Union St., between High St. and Gravel Lane, Boro, over an extent of 800 yards of 7-in. main, and through the F. Brigade stand-pipe, hose, and jets. This 7-in. main is connected to the 9-in. main in the High St., Boro, which, after a run of 500 yards, is joined to 200 yards of 12-in. main, and then continued by 550 yards of 15-in. main to the great main leading from the Co.'s works at Battersea, making a total distance of 5500 yards from the place where the experiment was made. One 2½-in. stand-pipe with 40 ft. of hose and ⅞-in. jet, rose 50 ft.; three similar stand-pipes with same length of hose and size of jet, rose 40 ft.; six do., 27 ft. Then all the fireplugs in the mains were closed except the first, and one 2½-in. stand-pipe with 160 ft. of hose and a ⅞-in. jet, rose 40 ft. The quantity of water delivered from the same main through one stand-pipe and different lengths of hose was as follows, viz.: One 2½-in. stand-pipe with 40 ft. of hose and ⅞-in jet, delivered 96 gals. in 59 seconds; one similar stand-pipe with 160 ft. of hose and ⅞-in. jet, delivered 116 gals. in 70 seconds; while one similar stand-pipe with 40 ft. hose and ½-in. jet, delivered 118 gals. in 27 seconds.

A second trial was made in Tooley St. off a 9-in. main 1400 yards in length, connected to 1000 yards of 15-in., and 6650 yards from the works, when one 2½-in. stand-pipe with 40 ft. of hose and ⅞-in. jet, rose 60 ft.; two similar stand-pipes, etc., did not make any perceptible difference; while with six similar stand-pipes, etc., the height obtained was only 40 ft. The quantity of water delivered from the same main through one 2½-in. stand-pipe with 40 ft. of hose and ⅞-in. jet was 114 gals. in 64 seconds; through six do., 112 gals. [? each] in 78 seconds.

Further trials from smaller service-pipes were made in the same locality, with a less rise of water.

The following is the evidence of Mr. Samuel Bradley, who had then been three years Superintendent of the Fire Police at *Preston*, and who had been previously for fifteen years in the Manchester F. Brigade, regarding his experience of the application of a constant water supply at high pressure to the prevention and extinguishment of fires at Preston.

Q. Have you had any fires lately?—*A.* There was one in a cotton warehouse about two weeks since. The fire was put out with the hose without the engine. The hose is on a reel on the engine, but we much prefer to use the hose alone. We unwind it, screw it on to the plug, and use it instead of the engine. For the last two years we have never used the engine. The hose is more effectual and more rapid in its operation. The water by the hose can be thrown over the highest building.

Q. Why do you prefer the hose to the engine?—*A.* Because it is much more handy, can be easier taken into any part of the building, and requires much fewer hands to manage it.

Q. Do the factories keep hoses?—*A.* Several of them do: Mr. Rogers, of Pitt Street. has such a hose, and he has put out a fire at least once—I think twice—before the engine was called.

Q. From your experience in the F. Brigade in Manchester, do you think that by means of the hose screwed to the water-plug you can extinguish fires more quickly than could be done in Manchester with the engines?—*A.* In Manchester there was some delay, owing to the water being off at times. Here they can put on water in 30 seconds after reaching the fire, and the pressure being stronger at night, in the main, than in the day (owing to there being no use for it at that time), I am sure the system pursued here is more effectual and rapid.

Q. Would it not be much better to have a hose-reel, or hoses, in different parts of the town, instead of dragging up to the fire a heavy engine which you do not use?—*A.* It would be very much better, and I am very desirous that the Commissioners of Police would enable me to do so. The reel must be on a spring-cart, in order to carry the ladders also. The ladders are very useful in the case of the hose. I am sure if we had a reel, I could reach a fire in a quarter of the time that it now requires with the engine.

This evidence is referred to in the Rep. we are about to quote.

1844.—The *First Rep. of the Commissioners for Inquiring into the State of Large Towns and Populous Districts* was pub. this year. One of the points of inquiry had been "the supply of water in such towns and districts, whether for purposes of health, or for the better protection of property from fire." Much evidence was obtained on this question from practical men. We propose first to notice the evidence of Mr. T. Hawkesley, C E., one of the engineers of the Trent Water Co., regarding the supply of water to *Nottingham.*

Q. Would not this street watering or street cleansing apparatus be available for the extinction of fires, and be easily found and easily applied from its being constantly in use?—*A.* Yes, and would be more conveniently and rapidly applied than any arrangement of fireplugs.

Q. Have fires been frequent at Nottingham?—Very infrequent. There have been only 2 serious fires within the last 10 years; but at one of them, the fire at the Exchange, if the water had not been on at the time at high pressure, which enabled a quick delivery of water (at the estimated rate of delivery of 1200 gals per minute) all round the building, the fire would in all prob. have been as extensive as the recent fire at Hamburg.

Q. What is the height to which jets from the smaller mains of 3 in. and upwards rise at the extreme points of delivery?—It will in general be about half the height due to the pressure. On an average level, jets of water are thrown over 3 or 4 story houses. On a recent occasion water was thrown from the ½ in. nozzle of a hose-pipe attached to a stand-pipe fixed in a 2-in. fireplug at the extremity of a 3-in. main, on to the roof of a 4 story house; the estimated height to which the water was projected being 48 ft., the ½-in. nozzle delivering about 30 gallons a minute. With proper arrangements the fireplug might be knocked out, and a hose attached in two minutes. On the occurrence of a fire, one such jet at the least might be brought to bear in two minutes upon any house in which a fire occurs.

Q. In country towns how soon on an average is a fire engine brought to the spot and set to work?—Not on the average in less than half an hour certainly.

Q. It is stated by Mr. Braidwood that in Lond. 26 men working an engine of two 7-in. barrels will throw a $^{13}/_{16}$-in. jet 50 ft. high; and the following is an account of some experiments made at the works of the Southwark Water Co. to ascertain the capacity of the existing works to afford several jets for street cleaning or extinguishing of fires [an abstract of these experiments we have already given]. In confirmation of these results it is stated in answer to some inquiries made at *Philadelphia*, that "the water will rise from a hose attached to a fireplug in the street at the extreme point of delivery, during the night, to the height of about 40 or 50 ft. During the day, when the consumption of water is very great, it will not rise more than 20 or 30 feet." Do these results correspond with your experience and observation?—Yes, they do. But it may be well to state that the great diminution of velocity, and consequently of elevation, observable in the least favourable experiment of each set, is to be chiefly attributed to the great aggregate area of the jets in proportion to the area of the stand-pipe and hose.

Q. Although the height to which water will rise from jets is in general, in consequence of the resistance of the atmosphere, half of the height due to the pressure, will it not in a hose, or in a pipe, rise to the full level, so that it may be poured out to extinguish fires, or used for any purpose from the full height?—When the water is not in motion, it will rise to the level of the reservoir. When it is in motion, there will be friction in the main-pipes, by which the height will be in some degree diminished. When the main pipes are of considerable size, compared with the area of the jet, this friction will be insignificant. The higher water is carried in a pipe, or the higher the nozzle of a hose-pipe is carried, the more the resistance of the atmosphere is avoided. If a jet acting under a pressure of 100 ft. attained an elevation of 50 ft. when discharged from the level of the pavement, then if the hose-pipe were elevated to the height of 50 ft., a jet would still be given of 20 or 25 ft. high. By this means the water would attain an elevation of 70 or 75 ft. in place of 50; hence the advantage of carrying a hose-pipe up-stairs, or up a ladder, or as nearly as possible to the height of the story where the fire occurs. Another advantage gained by carrying up the hose-pipe is a better direction of the jet, and more certain application of the water than can be had from the ground.

Q. The advice of Mr. Braidwood, the Director of the F. Brigade in Lond., being requested as to the best mode of protecting the British Museum from fire, he advised that that building should be surrounded with mains kept constantly filled with water at high pressure. This has been done. Now, whenever the system of constant supply at high pressure is adopted, will not the same result as to increased safety be produced in its degree for every house within the reach of a hose attached to a main?—Certainly it may, *especially if practised firemen* or policemen be in readiness to apply the apparatus; otherwise it is to be feared that the usual want of presence of mind on occasion of fire may sometimes interfere with the success of the arrangement.

Q. The following evidence has been given as to the experience of the application of the constant supply, at high pressure, to the prevention and extinguishing of fires at *Preston* [evidence of Mr. Bradley, already given in this art.]. Do you conceive that such applications of the system of constant supply at high pressure are generally available? —Yes, I do; more particularly in the provincial towns, where a regular fire brigade cannot be maintained, and in most cases such means would, when unable to subdue the fire, serve to keep it in check until the arrival of the engines and firemen.

Q. For small streets they usually send 3 engines; for larger streets, such as Portland Place, 6 or 8 engines. Now will not a 3-in. service-pipe, or more, such as would be used in the smaller streets, afford 1 or 2 jets; a 6 or 7-in. main afford, at 150 ft. pressure, 6 or 8 jets; and a 9-in. main at such pressure afford many jets?—*A.* Yes; a 9-in. main would afford more jets than could perhaps be brought to bear on any ordinary fire, and might be expected to deliver water through nozzles of 1-in. diameter to a height of 80 ft., especially if the plug-branches were of proportionate diameter.

Q. What would in general be the expense of inserting a fireplug in a 3-in. service-pipe, or in the larger mains?—*A.* In a small service-pipe the expense might be about 20*s.* The expense would vary with circumstances; but I conceive that sufficient plugs might in general be inserted in most mains and service-pipes at an expense of from 20*s.* to 30*s.* each.

Q. For how many houses would one plug serve?—*A.* I think it would suffice if they were 50 yards apart, or 1 to 7 houses in length of street. No house would then be more than 25 yards from a fireplug. At an expense of 25*s.* per fireplug, the first cost would be about 2*s.* per house, in the case of a main laid down in the middle of the street for the supply of both sides. This at 10 p.c. is equal to a rent-charge of 2½*d.* p. ann., or about one-fifth of a penny p. week.

Q. Have you not stand-pipes which afford 2 hoses and 2 jets to 1 plug?—*A.* Yes, we devised such a plug at Nottingham, and I have since heard from Mr. Braidwood that such an apparatus has long been in use in Lond. for feeding the F. engines. It would be practical to have a stand-pipe to supply 3 or 4 jets at once, if the service-pipes and fireplug apertures were properly proportioned.

Q. It is stated that as an add. means of securing warehouses or premises of value, a water tank is sometimes placed at the top of the premises, and a pipe is carried from thence through each room and down to the basement. There is a plug or cock opening from the pipe into each room, so that a hose may be at once attached, and a jet at once brought to bear upon any part of the room which may be on fire. This appears to be carrying the principle of a constant supply still closer as a means of prevention; and instances are stated to have occurred recently in *Manchester* of fires being at once extinguished in buildings so protected, which would, it is confidently believed, have been certainly destroyed, and property from £50,000 to £100,000 have been consumed if it had been necessary to wait the usual time for the arrival of the F. engines and for their getting to work. Have you had any buildings so protected on the system of constant supply at high pressure at *Nottingham*?—*A.* Yes, we have several mills and factories protected at Nottingham by 3-in. pipes, which pass from the main up the staircase, with branches into each room. In several instances a branch main is carried into the premises, and firecocks are provided; a timber yard and at least one chapel is so protected.

Q. On the system of constant supply at high pressure, you enable the parties to dispense with the expense and inconvenience of tanks on the roofs?—*A.* Yes, and render it much more safe. The tanks might be soon out of water, but the communication with the co.'s main would bring to bear, if necessary, the whole contents of their reservoir. The private tank may, besides, be frozen, or it may have been neglected, and be out of order and empty at the time its services are required. This was the case with much of the apparatus kept in the Tower; when required for use at the late fire, it was found to be unavailable.

Q. What may be the expense of such a mode of protecting a warehouse, say 60 ft. high?—*A.* It would be about £25.

Q. What add. rent would it involve for apparatus and supply?—*A.* Presuming that no add. water would usually be consumed, we charge at Nottingham nothing add. for the supply of the fire-pipes. The add. rent would be about £2 10*s.* to cover int. and wear and tear.

Q. What would be the expense of such an apparatus, with a water-tank on the roof, on the system of occasional supply?—*A.* The expense of such an apparatus with a sufficient water-tank would be about £100.

Q. This arrangement then brings to bear on the premises in a few minutes the force of several F. engines?—*A.* Yes.

Q. It would be a small warehouse, would it not, where the ann. ins. would be £20 [prem.]?—*A.* Yes, I conceive it would.

Q. And the ins. of some extends to £600 p.a. and upwards?—*A.* Yes.

Q. Suppose that, for the sake of the increased security, under a system of constant supply at high pressure, there were laid down in the streets of the metropolis, containing warehouses or valuable property, large mains, say of 9 in. (where for all purposes of ordinary supply small service-pipes would perhaps suffice), mains to be used chiefly in case of fire, under such an arrangement as that round the British Museum, what would be the expense of such mains, supposing the large house or warehouse to have a frontage of 60 feet?—*A.* The add. expense of such a main over a 3 or 4-in. service-pipe, including add. fireplugs, might be about £10, involving an add. rent of about £1 to such warehouse, in any place where there is a continuous line of warehouses. It is right to observe that under the present state of things, recognized by the law, public cos. are not authorized, and indeed are in effect prohibited from expending such an amount of cap. as would be requisite and would be involved in general works of the magnitude presupposed by this question. *The Acts by which water cos. are now estab. and governed, only authorize them to expend such sums of money as may be necessary to effectuate the purposes contemplated by the Act;* such for instance as domestic supplies, supplies for trade and manufacturing purposes, for steam engines, public baths, and other like purposes. *The supply of water for the extinction of fire is scarcely more than incidentally alluded to.* The fixing of fireplugs is usually, but not in every instance, imposed by the legislature; and even in this case no compensation is granted in respect of the co.'s expenses, nor is any return made for the supply of water afforded. *It is not therefore the fault of the water cos. if more effective arrangements are not made for the prevention and extinction of fire.*

The Commissioners then proceed to consider the influence of improved appliances for the extinguishment of fires upon the rates of ins.; and also the influence of properly constructed party-walls in cottages in provincial towns in the same regard. This question is considered under FIRE INS. PREMIUMS.

By way of supplement to the preceding, we add the evidence of Mr. Edward Corbett, architect and surveyor, and also an ins. agent in *Manchester*, which contains much valuable information:

Q. Have you also been a considerable time on the Police Commission?—*A.* I have been about six years on the Commission, and during the greater part of that time I have been on the Fire Committee.

Q. Had you, as a member of that Committee, to consider the best mode of obtaining supplies of water in case of fire?—*A.* That of course was one object of our attention.

Q. Were you satisfied that the mode of supply was adequate for the purpose intended? —*A.* Decidedly not. I felt much dissatisfied with the delays which occurred in securing supplies of water for the engines on their arrival; and at one of the earliest meetings of the Committee, after my election, I proposed that means should be taken to have water constantly on in the mains, but the proposition was overruled on account of the expense.

Q. In what did the additional expense consist?—*A.* It was said that an additional sum would have been charged by the water-works to compensate them for the water being constantly on, and therefore liable to be drawn off by the consumers; to meet which add. charge there was no fund available by the Committee.

Q. Are you aware that by the experience of *Preston*, *Ashton*, *Nottingham*, and other towns in which water is constantly on in the mains an actual saving of water is effected by this very circumstance?—*A.* I was not then aware of it, but since that time I have become so.

Q. Have you read the evidence of Mr. Anderton, of *Preston*, and of Mr. Bradley, the Manager of the F. Brigade in the same town, for extinguishing fires, and also of Mr. Hawkesley, relating to *Nottingham*, and the answers to the questions received from Philadelphia and New York, stating the results of having a constant supply in the mains night and day at high pressure, to be applied at once by means of a hose, and thrown over the premises if necessary to extinguish fires?—*A.* Yes, I have.

Q.—If such a system had been available since you have been a member of the Fire Engine Committee, what amount or proportion of loss from fire do you think might have been saved to the town?—*A.* I think it would be fair to estimate that one-half of the losses by fire would have been saved. I am not prepared to estimate that saving with great accuracy; but I feel very confident that it would have been upwards of £100,000 during about seven years.

Q. Does the construction of the warehouses in *Manchester* render them peculiarly liable to destruction by fire?—*A.* Very much so. The general fashion of forming warehouses has been to build them with wood bearers and beams, supported on cast-iron columns, brick outside walls lined with wood, painted and varnished, with a well for hoisting goods through every floor, these wells being formed of wood. They have a large space for light, from the top to the ground floor, open through and serving as a funnel in case of fire; the counters surrounding the walls being backed with varnished wood-work, forming a supply of fuel, and the windows being so many air-draughts to supply the air requisite to cause the whole to burn in the shortest possible time.

Q. Then, with such a form, it must be of the first importance to have an immediate supply of water.—*A.* Without an immediate supply the efforts of the most skilful fireman will in most instances be useless in saving the building on fire, and can only be directed to prevent its extension, which is often a difficult task, from the extent of the buildings in fire connexion, and the narrowness of many of the streets.

Q. Do you consider it practicable to build warehouses possessing similar advantages to those now existing, but less exposed to risk of destruction by fire?—*A.* Certainly. They ought to be built with well-faced brickwork or masonry, instead of the wooden wells, the walls and ceilings being also of brickwork; care being taken in the arrangement for gas light, warming, and ventilation, so as to diminish the risk of fire from these sources.

Q. Do you consider that warehouses should be separated by party walls?—*A.* Yes, certainly so; for when we come to calculate the relative cost of ins. and fire-fencing construction, as applied to warehouses and buildings destined for the reception of costly goods, the expediency and economy of constructing such walls and fire-fences is very apparent. Suppose we take the case of a warehouse 5 stories high, 16 yards deep, and 10 yards wide, we have a cost of about £1600 on the building, to insure at a rate of nearly 3*s.* say 2*s.* p.c. add. [now much increased from these figures], equal to £1 12*s.*; goods value perhaps on average £10,000, at 2*s.*, equal to £10—total saved ann. £11 12*s.*; and as the cost of the wall is not increased, because the requisite thickness for a fire-fence is also requisite for strength, we have only to add this 2 ft. above the roof 1½ brick in thickness . . . total outlay £4 16*s.*, the interest on which is amply covered by saving on the building alone. There is little doubt that the present defective system would find its remedy even without legislative interference, by the rates of ins. rising and acting as a check on it. But still much mischief must arise in the mean time: many offices even now refuse to take the risk.

1845.—*The Second Rep. of the Commissioners for Inquiring into the State of Large Towns and Populous Districts*, was presented to Parl. We find therein the following important passages regarding "Arrangements for the Supply of Water for the Prevention of Fire:"

> XXI.—We have already adverted to the legislative enactments relating to the supply of water for the extinction of fire, and we there intimated our opinion that the water cos. should be required, under a penalty, to keep the mains constantly full of water, and that the distance between the fireplugs should be limited. *The present general arrangements in towns, both on the part of the water cos. in providing ample supplies of water, and on the part of the other authorities in furnishing the means for its speedy and effectual application, vary from the highest degree of efficiency to a total want of that preparation which prudence and foresight require.* At *Nottingham*, *Preston*, and *Oldham*, the practice of keeping the water constantly on in the mains and pipes under a high pressure, affords the opportunity of applying it rapidly on the first outbreak of fire. The constant pressure maintained at the works of the cos. enables them in most instances to throw a jet of water to the top of the houses without the aid of a fire engine. The facilities thus given for the extinction of fire has caused the gradual intro. of fireplugs upon each story of large buildings; and we are assured that the efficiency and rapidity of this mode of applying the water has, on more than one occasion, successfully prevented any extensive damage. In extensive fires this system may not supersede the necessity of using F. engines, but we cannot too strongly recommend its adoption where circumstances afford opportunity for its application.
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> At *Bath* new mains have been laid down so as to supply water on this principle; but they do not extend beyond the district supplied by the corp. Other portions of the city are left without the advantage of such protection, although their position would admit of such a mode throughout nearly the whole of the city.
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> The system of supply at constant pressure affords peculiar facilities for the especial protection of large and public buildings from fire; but the requisite arrangements, by inserting a sufficient number of fireplugs, appear to be rarely made. We are of opinion that it would be an important advantage if the owners of such buildings were empowered to have inserted, at their own expense, a sufficient number of plugs in the mains of the water cos. under proper regulations.
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> With the exception of *Liverpool*, we have not found in any town a separate supply of water introduced for the distinct purpose of protecting property from fire. The enormous destruction of property that has occurred in that town from this cause, the extent of which has been chiefly attributed to the difficulty of obtaining a sufficiency of water, compelled the authorities to seek for a better supply than could be procured from the existing water co. The losses sustained at Liverpool are not, however, confined to actual destruction of property by fire, *the increased charges for ins. are the source of a serious and constantly add. expense.* The prem. upon ins., always high in that town, has has been raised from 8*s.* to 35*s.* p.c., while the rates for similar risks in Lond. vary from 2*s.* 6*d.* to 5*s.* The diminution of the losses from fire, as well as the saving in the charges for ins. produced by the intro. of an improved supply, is also further illustrated in the evidence contained in the replies from Philadelphia and N. Y. [FIRE INS. PREMS.] In the latter city the reduction in the charge for ins. has been 25 p.c. since the formation of the Croton Viaduct.
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> The arrangements for the estab. of a proper service of F. engines and the necessary accompaniment of officers and men are for the most part very defective. In any but the largest towns fires are happily not sufficiently frequent to give constant and exclusive occupation for a body of firemen; but this deficiency might be in some degree amended, if a portion of the police were regularly trained to undertake this duty, under the care of an efficient superintendent. Such a body might be entrusted with the charge of all the F. engines in the town, which when brought under one united management would be rendered more efficient than they are now described to be. *They are now generally the property of the F. ins. offices, the corp. bodies, or parishes, and sometimes of private individuals.*

> The intro. of a regulation requiring the estab. of a proper number of engines placed under the care of competent men, would be a most important improvement, both in respect to security of property, and in the economy of the expense of maintaining the existing separate estab. It does not appear that any system of rewards for the discovery of fires and early arrival of the engines, similar to that adopted in the metropolis, is generally in force. We believe that it has been found most beneficial in stimulating the exertions of firemen, and might be usefully extended.
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> In many cases it appears to us that the causes of fires are not sufficiently investigated in places where accidents from fire frequently occur, *and that much valuable information would be acquired and generally diffused were the causes of all fires thoroughly investigated.* No regular inquiry is now instituted to ascertain the origin of fires unless they are attended with circumstances leading to the suspicion that they have been caused wilfully. *It may therefore be worthy of consideration whether such a duty should not be imposed on some existing authority.*

The Commissioners therefore recommend, "*that for increasing the protection of property from fire, in all cases the supply of water in the mains be not only constant, but also at as high a pressure as circumstances will permit, and that fireplugs be inserted in the mains at short intervals.*"

1847.—There was enacted the Town Police Clauses Act, 10 & 11 Vict. c. 89, under which districts where the Public Health and Local Gov. Acts are applied, as also places under any local Act with which the provisions of the Police Clauses Act with respect to fires are incorp., may provide fire engines and firemen for the extinguishment of fires; and then follows this section:

> 32. The Commissioners may send such engines with their appurtenances and the said firemen beyond the limits of the special Act, for extinguishing fire in the neighbourhood of the said limits, and the owner of the lands or buildings where such fire shall have happened shall in such case defray the actual expense which may be thereby incurred, and shall also pay to the Commissioners a reasonable charge for the use of such engines with their appurtenances, and for the attendance of such firemen; and in case of any difference between the Commissioners and the owner of the said lands or buildings the amount of the said expenses and charge, as well as the propriety of sending the said engines and firemen as aforesaid for extinguishing such fire (if the propriety thereof be disputed), shall be determined by two Justices whose decision shall be final; and the sums of the said expenses and charge shall be recovered by the Commissioners as damages.

It is under this clause that questions have arisen regarding the expenses of extinguishing fires. [FIRE EXTINGUISHMENT, EXPENSES OF.]

1850.—There was pub.: *Rep. of the Gen. Board of Health on the Supply of Water to the Metropolis*, wherein occur the following passages:

> Having considered, as required under the Metropolitan Sanitary Commission, the means of supplying water to extinguish fires, and having examined the practical experience of improved works in relation thereto in other towns, we find—
>
> 52. That the inadequacy of the supplies of water under the intermittent system occasions great danger to life and property, but that by arrangements which are practicable under a system of constant supply at high pressure, the whole force of the water in the mains may be brought to bear at any point for extinguishing fires in from 1 to 5 minutes; or in about one-fourth of the time that it takes the best appointed F. engines now to gain the spot and be in action after the alarm of fire has been given.
>
> 53. That, judging from the experience of various places where improved arrangements have been put in practice, it appears that by the general adoption of these arrangements more than two-thirds of the fires which now occur in the metropolis may be extinguished before any extensive damage takes place.
>
> 54. That the ins. risks on life and property may be diminished in a yet greater proportion.
>
> 55. That the crime of incendiarism may be checked, and that these consequences alone, were there no other advantages to be obtained, would render it worth while to make a change from the intermittent system to the constant system.
>
> 56. That these advantages may be best given by the same means by which a more perfect and cheaper surface cleansing of courts, alleys, foot pavements, and carriage ways than by hand, may be effected—namely, by jets of water distributed under high pressure.

In a paper by Mr. Samuel Brown, *On the Fires of Lond.*, etc., contributed to the *Assu. Mag.*, that writer suggests, apparently with timidity, whether the electric telegraph might not be made available for calling to aid the fire extinguishment appliances for outlying places in the metropolitan district.

1851.—The Great Exhibition brought into prominence an invention of the preceding year, viz. the *Fire Annihilator*, as invented by Mr. Phillips, of which we have already given some account under FIRE ANNIHILATORS. The Jurors of Class X. consisting of Sir J. Herschel, Bart., F.R.S., Sir David Brewster, F.R.S., Mr. James Glaisher, F.R.S., and others, reported upon the invention as follows:

> This is a portable machine for the immediate production of steam, and carbonic acid and other gases, which being directed upon the burning matter, is designed to check the progress of the flames more speedily than the usual application of water. It is in its form cylindrical, and slightly conical; it varies in size from 16 by 8 in. to 24 by 12 in., and is comparatively inexpensive. . . . The fire annihilator in its action may be said to resemble that of a pump drawing water, or the condenser of a steam engine. The vapour which issues from it enters the building in a highly expansive state, and extinguishes the flames chiefly by the pressure of gases adverse to combustion, but partly also, no doubt, by reducing it to a temperature lower than that at which flame can exist. By degrees, the room being full of vapour, the temperature decreases, and the vapour condensing into water, fresh air enters to supply its place, and renders it possible for men to enter and complete the work of extinction of the embers. The machine is unattended by any practical difficulties in its use. The mixture of steam and gases may be produced within a few seconds after striking the top for the purpose of breaking the little bottle. The vapour itself possesses the advantage of being less destructive to the unconsumed articles with which it comes in contact, and being also a more penetrative medium than water, is better calculated to act simultaneously upon the innumerable particles of gas which combine to produce flame. It is stated to be perfectly innoxious to human life, which of course must be understood to be during that short time, and in that state of admixture with air in which men have occasion to inhale it.

They state that the idea which Mr. Phillips had successfully applied in his F. Annihilator was suggested by his witnessing some years previously in the Mediterranean Sea an irruption from an island, thrown up from a depth of 80 fathoms; he observed that when the vapour formed by the boiling water, and precipitated upon the lava, came in contact with the flame, the latter was instantly extinguished. This is another instance of the advantage of observing the operations of nature. Finally, the Jurors, after detailing the successful results of an experiment they had seen performed, thus conclude their Report:

> When we take into consideration the large number of fires which, both by day and night, endanger the life and destroy the property of individuals, situated in or near the metropolis, the production of a machine such as that Mr. Phillips has exhibited, promises to be of very considerable utility. By being provided with one of these, each household is possessed of an instantaneous means of checking a fire at its commencement, long before any great destruction of life or property could be apprehended. *Its advantages on ship board can scarcely be over-estimated, and are most obvious.* The jury considering it well adapted in its application to the purpose intended, and being perfectly satisfied with its performance in this instance, have awarded Mr. Phillips a prize medal.

During this year it was reported that a coal-mine that had been on fire for 30 years, and had extended over 26 acres, was completely extinguished by injecting into it 8,000,000 cubic feet of carbonic acid gas. Water and chemical solutions had been tried in every way and quantity for years upon these burning acres of coal without any perceptible effect, for the intense heat drove them back, or reduced them to vapour.

1852.—The loss of the *Amazon* steamship at sea by fire in Jan. of this year caused a number of scientific persons to take into consideration the most ready and efficient means of extinguishment in such cases. *Steam* was suggested, and various experiments were made in France. As an evidence of the result, the Préfet du Nord soon afterwards issued an order to all the distilleries within his Department, requiring them to provide flexible tubes, and pipes communicating with the boiler, so that in case of fire a jet of steam might at once be directed on the flames in whatever part of the building they appeared. We shall examine the question of *steam* as a F. extinguisher carefully as we proceed. (See 1864, 1873, 1874, and 1875.)

1853.—In the *Gardener's Chronicle and Agricultural Gazette* for this year is a proposal for the application of fire extinguishing works to country mansions and farm buildings, from the pen of Lady Bentham.

1854.—Lady Bentham contributed to the *Journal of the So. of Arts* a paper: *On the Combination of Fire Extinguishing Works with those for the Supply of Water and other Domestic Purposes*, in which a very full account is given of the various suggestions of the late Sir Samuel Bentham for extinguishing fires in dockyards, etc.; some of which have already been noticed under date 1797, etc.

1855.—Dr. Clanny suggested, as a ready means of extinguishing fires, the use of a fluid consisting of five ounces of ammonia to a gallon of water.

1856.—Mr. Braidwood, late Chief of the Metropolitan Fire Brigade, read a paper before the So. of Arts, *Fires: the Best Means of Preventing and Arresting them: With a Few Words on Fire-proof Structures*, wherein he says:

> The best means of arresting a fire is a very wide question, as the only limit to the means is the expense. Different nations having different ways of doing the same thing. On the Continent, generally, the whole is managed by Government, and firemen are placed under martial law; the inhabitants being compelled to work the engines. In Lond. the principal means of arresting fire is a voluntary asso. of the ins. cos. without legal authority of any sort, the legal protection by parish engines being, with a few praiseworthy exceptions, a dead letter. In *Liverpool*, *Manchester*, and other cities the extinction of fires by the pressure of water only, without the use of F. engines, is very much practised. The advantages of this system are very great; but to enable us to follow this system, the whole water supply of Lond. would require to be remodelled. In *America*, the firemen are generally volunteers, enrolled by the local government. They are exempted from other duties, or are entitled to privileges which appear to satisfy them, as the situation of fireman is eagerly sought in most of the American cities. Which is the best of these different modes it is difficult to say; perhaps each is best suited for the place where it exists.

He adds:

> On the first discovery of a fire, it is of the utmost consequence to shut, and keep shut, all doors, windows, or other openings. It may often be observed after a house has been on fire, that one floor is comparatively untouched, while those above and below are nearly burned out. This arises from the doors on that particular floor having been kept shut, and the draught directed elsewhere. If the fire appears at all serious, and there are F. engines at a reasonable distance, it is best to await their arrival, as many buildings have been lost from opening the doors and attempting to extinguish fires with inadequate means. If no engines are within reach, it is well to keep a hand-pump. If that is not to be had, the next best thing is to collect as many buckets outside the room on fire as can be obtained, keeping the door shut; then creep into the room on the hands and knees (if the heat and smoke are considerable), and throw the water as nearly in the direction of the fire as possible, keeping the door shut while more water is being collected. The police of the metropolis understand shutting up fires so well, that they have in many instances kept fires 2 or 3 miles distant from the engine stations shut up until the firemen arrived in time to extinguish them.

1858.—This year Mr. John Bird, of Mount Auburn, Mass., pub. a pamph.: *Fires and Fire Systems*, in which the subject of F. extinguishment is considered.

1860.—The first Steam Fire Engine used by the Lond. F. Brigade was brought into play at a fire at the back of Doctors Commons, with results on the whole satisfactory.

One of the first cities which adopted a complete system of telegraphic communication in view of Fire Extinguishment was *Baltimore*. The plan we have already described under FIRE CALLS; but one of the first effects of this system combined with an otherwise efficient F. brigade, was a considerable reduction in the rates of prem., as to which the following may be regarded as specimens, p. 1000 dols. insured:

	1850.	1860.
Dry goods	65 cents.	40 cents.
Hardware	75 ,,	50 ,,
First-class Dwellings	30 ,,	25 ,,
Furniture in Dwellings	50 ,,	40 ,,
Wholesale Groceries	65 ,,	40 ,,
Liquors in Casks, and Glass	75 ,,	50 ,,
Warehouses (storages)	65 ,,	40 ,,

It was reported that in one instance an engine, equipped, was at a fire three-quarters of a mile from its house, and ready to go to work, in *six minutes* from the time the crank of the fire telegraph was turned.

1861.—Mr. J. F. Bateman, C.E., F.R.S., President of the Section of Mechanical Science, at the Brit. Asso. Meeting at Manchester this year, read a paper *On Street-pipe Arrangements for Extinguishing Fires.* He explained the systems in use in Manchester, Glasgow, and other large cities, much as they have been already described in this art. He said nothing could have been much worse than the arrangements for extinguishing fires some 15 years ago, "nor than the state of things which existed at the present day in the City of London."

In the vol. of the *Mechanic's Mag.* for this year will be found some practical remarks on the subject of F. extinguishing arrangements, in a series of art. entitled "Fires and Fire Brigades."

1862.—A select Parl. Committee was appointed to inquire into the existing state of legislation, and of any existing arrangements for the protection of life and property against fires in the metropolis." The Rep. of this Committee falls to be dealt with more particularly under FIRE PROTECTION; while some of its passages have been reviewed under FIRE BRIGADES. The following apply here:

22. Your Committee have been unable to ascertain with any accuracy what is the total amount paid in the whole by the metropolitan parishes for the maintenance, however inefficient, of their present engines, under the Fire Act; but it must be considerable. It is estimated by Mr. Newmarch from £5000 to £10,000 p.a., but nearer £10,000.

23. If however the intentions of the Act of Geo. III. [1774] were enforced, and every parish were bound to maintain an efficient estab. on the same scale as at Hackney, it is prob. that the whole expense would be in the same proportion, say at the rate of ½*d.* in the £ in the rating, or at a gross charge on the rating of £12,000,000, of not less than £25,000 a year; and then the objection would still exist to the system being purely parochial, and incapable of being brigaded. . . .

34. The supply of water is a matter of great importance in connexion with this inquiry; and although your Committee did not consider it desirable to institute any particular investigation into the operations of the Water Cos. Acts, yet as it was given in evidence that on many occasions on the south side of the Thames the supply of water was deficient on occasions of fires, your Committee thought it right to summon a witness on the part of the water cos. supplying this district, and they would refer to the evidence given by Mr. Quick, the engineer of the Southwark Water Co. and the Grand Junction Water Co., on this subject.

35. Some better regulation appears to be desirable to secure the immediate attendance of the fire-cock men, by a special arrangement made under some responsible policeman or other person charged with the duty of giving the earliest notices of fire to the turncock.

36. Mr. Quick stated to your Committee, *that in order to secure a constant supply of water for fires at high pressure, it would be necessary to have a completely new system of fire mains, and that such a new system would not prob. be effected at a smaller cost for the whole metropolitan district, than* £3,000,000. This opinion is also confirmed by the evidence of Mr. Easton.

37. Mr. Quick stated that it was owing to the unwillingness of the inhabitants to incur the risk of frequent bursting of pipes from high pressure, that the system of high pressure was not more generally carried out in the service pipes; and not to any unwillingness on the part of the Cos. to comply with the provisions contemplated by the Water Cos. Act of 1852.

It will be interesting to note the evidence of various witnesses regarding the condition at this date of the parish engines, which former Parliaments had shown such solicitude in having provided for the protection of the metropolis. The fact is that the parish authorities had taken advantage of the Brigade estab. by the Fire Ins. Offices, and had grossly neglected their duty.

Sir Richard Mayne, then Chief Commissioner of the Metropolitan Police, stated that the parish engines were mostly kept at churches and workhouses, under the authority of the beadles, or private persons, who were paid a trifling sum by the parochial authorities. At great fires they were quite inefficient; at small fires they were not wanted. There were 98 parishes in the city which were bound by the old law to keep 2 engines each; if they did, it was done in a most inefficient manner. In 104 parishes within the operation of the Act no engines were kept; but 106 parishes kept 147 engines. He thought it rather an advantage that the parish engines should not be brought to fires.

Mr. D. W. Harvey, then Chief Commissioner of the City Police, said he regarded the parish engines as entirely worthless.

Capt. Shaw, Chief of Lond. Fire Brigade, said the parish engines were, as a general rule, first at the fires, but not first to work; "many of them cannot get to work at all."

Mr. Drummond, Chairman of the Committee of Fire Offices, said the parish engines only clashed with the brigade when they attended fires.

Mr. John Bowring, Clerk to the City of Lond. Union, was called, and the following is an abridgment of the dialogue which took place :

Q. How many parishes are there in the City of London Union ?—*Answer*. 98.

Q. Do you know how many of those parishes maintain a F. engine ?—Yes ; in the year ending Lady Day '59 there were 30 salaries paid to engineers ; that is to say, 30 engineers were paid by 30 parishes.

Q. Do you mean keepers of engines ?—What might be termed engine men, or engine women, or engine children, as the case may be. They call them parochial engineers, but in many cases they are parochial old women, or schoolboys who happen to run up with their little engines ; 30 were paid in '59 ; 28 in '60 ; 28 in '61. There were 32 rewards for the first and second engines in the year '59 ; 37 in '60 ; 41 in '61. As regards repairs of engines, 12 were repaired during '59 ; 7 during '60 ; and 10 during '61. As regards rents of engine sheds or rooms there were 3 places paid for during '59 ; 2 during '60 ; and 2 during '61. The total amount of cost during these 3 years for all these purposes was £1739 18*s*. 7*d*.

Q. How many of the parishes in the union have not contributed at all ?—32 of the parishes have paid nothing whatever towards these expenses, but some of them will have paid towards one class of the expenses, another portion will have paid to another class, and so on ; 66 parishes have contributed something, 32 nothing.

Q. What is the average amount paid during the past year by each of the parishes which do pay ?—About £30 a parish.

Q. If all the 98 parishes had paid at the same rate, what would it have amounted to ?—Nearly £3000.

Q. At present, so far as I understand, the total amount paid has been about £600 a year ?—Yes.

Q. Do you consider that in return for that £600 a year there is any efficiency whatever in the existing estab. ?—No ; you might as well have put £600 a year in the street to be picked up by any person who was passing by ; it would have been just as useful. With respect to a good many of these engines, for which engines keepers are paid, and small rents are paid, *one of them I know is bricked up behind a blacksmith's shop, and in fact if a fire happened you must pull down part of the house to get the engine out !*

Q. Is there an engineer for that engine ?—Yes.

Q. To what purposes are these engines kept up ?—To get the rewards ; but this poor unfortunate thing which is bricked up would never get the reward.

Q. Is it to get the engine keeper's salary ?—Yes.

Q. Do you think that these engines are kept up solely for the purpose of getting the rewards and the salaries of the people connected with them ?—Entirely so.

Nothing was immediately done. (See 1865.)

1863.—Mr. C. B. King read a paper before the So. of Arts : *On the Suppression and Extinction of Fires.* The subject, he said, was one of grave importance, touching as it does the safety of our lives and our property. In large manufacturing towns and cities, where immense wealth in the shape of merchandize is closely packed and stored, the importance of an improved construction of fire-proof warehouses could not be overrated. He said, although buildings could not be made wholly fire-proof, they could be constructed with the view of rendering them impervious to fire, viz. to resist, not to assist, any fire that may break out upon their floors. He described certain fire-proof buildings ; and noticed the mode of applying water to extinguishing fires. His paper was indeed mainly historical ; but the discussion which followed upon it was of a very practical character, and we propose to notice the remarks and suggestions of some of the speakers :

Mr. Wm. Baddeley, C.E., said, of all modern inventions for fire extinguishing purposes, nothing in his opinion was so really useful as the little hand pump. Many years controversy ensued before Mr. Braidwood could be brought to regard the hand pump with favour. The first trial that gentleman made with the hand pump was with an old one which was constructed previously to the Fire of London, and belonged to the parish of St. Dionis Backchurch. He believed there were 5 still remaining out of half a dozen of these pumps made originally ; but the trial of that hand pump led to the construction of an apparatus of the same description, which kept up a continuous stream of water ; and the result of the experiments with these little hand engines was so satisfactory that every fire engine in Lond. travelled with one ; and they had been the means, in the hands both of firemen and civilians, of saving thousands of pounds worth of property.

Mr. Wm. Roberts, of Millwall, said he did not agree with Mr. King that large fires were inextinguishable. He had had some experience during 24 years as a volunteer fireman, and had had a brigade of his own during the last 4 or 5 years. There were few people who had not heard of that unfortunate locality with regard to fires—Millwall. A few years ago it was notorious the number of fires that occurred there ; but now a fire there was a rarity. Previously to the estab. of his own brigade, the nearest fire engine station was 3½ miles distant ; the consequence was the fire had time to get ahead before any water could be put upon it. He had been present with his brigade at fires which at first threatened to be serious. . . . He agreed with Mr. King that there was a mistake in the mode of attacking fires. Many persons attacked them from the top ; his own plan was always to set to work at the bottom. He never threw water on the top unless it was to prevent fire spreading to the next house. He had succeeded in extinguishing a fire at a paraffin oil manufactory, where 1000 gals. of oil escaped from a still. For the last 18 months only one serious fire had occurred on the Isle of Dogs. He recommended all persons who carried on dangerous trades to have the water laid on to their premises from the mains, with stand-pipes. There were very few chemical works in his own neighbourhood which were not so provided ; and the workmen were periodically drilled in the running out of the hose from the stand-pipe, and in all the operations necessary for subduing a fire. His own experience had been, that in the majority of instances all fires were extinguishable if properly attacked.

Mr. Glass regarded the question of fire extinction as a chemical rather than a mechanical one. They have spoken entirely of the application of water by mechanical means in a fluid state to the extinction of fires. The great object in a chemical point of view was to deprive the materials in combustion of the elements which most contributed to combustion. If the oxygen of the atmosphere were withdrawn, they had then carbonic acid, nitrogen, and watery vapour; all of which tended to extinguish fire. Mr. Phillips in his F. annihilator had applied acid with a certain amount of success; but perhaps the quantity supplied was not sufficient. If, however, this could be supplied in sufficient quantity, no doubt any fire could be extinguished by it. *His own impression was that the better way of applying water would be in the state of high pressure steam.* If steam were allowed to rush into the lower part of a burning building, he thought that would be the most effectual way of extinguishing the fire. The object was to substitute another atmosphere for that of oxygen, and that could be done by high pressure steam, which would reduce the temperature of the burning materials below that which was necessary for combustion; or the oxygen of the atmosphere might be absorbed by the combustion of a carbonaceous material. The object for which he principally rose was to suggest the application of high pressure steam to the extinction of fires.

Mr. Roberts said he had applied steam in the way suggested in several cases during the past year; there was, however, some difficulty in getting an apparatus that was easily manageable. *He had partly designed an engine in which either steam or water might be used.* The suggestion was made to him some 18 months ago by the Chairman of the West India Docks. (See 1873.)

Mr. Glass added that he thought the add. of salt of ammonia in the water employed for extinguishing fires would tend to increase its efficiency.

Mr. Wentworth Scott said he would warn them against the use of carbonate of ammonia in the water used for the extinction of fires; as so far from becoming decomposed by contact with incandescent surfaces, it would produce a vapour very offensive to the eyes and noses of all persons near it. Some years ago, during the Russian war, he made experiments upon various highly inflammable substances, including phosphorus; and was therefore solicitous to provide himself with the means of extinguishing a fire, in case it should arise from such very combustible materials. A very few experiments sufficed to convince him that, whilst water did very well for extinguishing fire upon a solid incandescent substance, *it had no effect whatever upon flame*, such as that of burning turpentine or tallow. This could only be extinguished by bringing an antagonistic vapour to bear upon it. The idea of changing the atmosphere within an ignited building might look well on paper, but was very difficult of accomplishment. The action of the flames caused such an intense draught through the building, and the consumption of atmospheric air was so enormous, that the entire atmosphere would be changed several times in the course of a minute. Let them judge, then, of the difficulty—not to say impossibility—of changing the atmosphere of a burning house in the way that had been suggested. There were some substances known to chemists which would produce the effect described upon the oxygen of the atmosphere. Prussic acid was one: but he should not be inclined to recommend the vapour of that acid for extinguishing fires. But chloroform might be used with great effect, and without the like injurious results. When mixed in small quantities with water—from 2 to 3 p.c.—and injected upon any kind of burning material, it acted very efficiently by cooling the hot solid particles, and rendering the air incapable of supporting combustion. It would extinguish flames which water *as water* never could do. [FIRE ANNIHILATORS.]

Mr. King in the same year read before the Brit. Asso. at Newcastle-on-Tyne a paper: *On Extinction of Fires*; which was practically the same paper which had led to the preceding important discussion.

1864-5.—Mr. Stewart Harrison developed a plan of extinguishing fires without human aid; or in other words a self-acting extinguishing arrangement. He adopted the principle of a water supply over or throughout the whole of the rooms of a building—much after the plan in this respect of Sir Samuel Bentham already described, 1797. From the main pipes he proposed to carry 2-in. pipes along the ceiling of each room, at distances of about 6 ft. apart. At the same distances along the pipes, dividing the whole area of the room into squares of 6 ft., or 36 superficial ft., are placed valves connected with the pipe, and fastened in by fusible metal solder, which keep the water shut off until the metal is melted. The pipes being charged, and the valves shut, all remains so until a fire breaks out, when the flame, or products of combustion, rising to the ceiling, as all hot or heated air will do, heats one or other of the valves, causing it to melt, and then the water comes into play. The minute mechanical contrivances involved we do not attempt to describe here.

The essence of the plan is that the heat rising at any particular point, the plug nearest thereto should melt, and release the water which would descend directly upon the burning materials beneath, and keep on doing so until shut off by those in charge. The valves were constructed in form resembling the "rose" of a garden engine, or watering-pot, so that the water became considerably distributed.

It was part of the arrangement that the flow of water should depress a piston in the water-pipe, thus releasing an alarum on the premises. This might be made to complete the circuit of a galvanic battery, and so give the alarm at any distance, as, for instance, at the residence of the proprietor, This is the principle of some of the Fire Detectors already noticed.

Where a constant supply of water cannot be supplied from the mains, this plan involves a cistern at the top of the premises, and means of ascertaining that it is kept filled.

It was proposed to apply it to fire protection on board ship. [Fires on Board Ship.] The invention comes before us again in 1874.

1865.—By the "Metropolitan Fire Brigade Act, 1865,"—28 & 29 Vict. c. 90,—powers are given to the Metropolitan Board of Works to take over the London F. Engine Estab., and to provide and maintain an efficient force of firemen for the extinguishment of fires in the metropolitan district; also for pulling down premises in view of putting a stop to fire (sec. 12), and generally for the maintenance of an efficient brigade. [Fire Brigades.] It also contains the following special provision:

> 30. It shall be lawful for the Board, when occasion requires, to permit any part of the F. Brigade Estab., with their engines, escapes, and other implements, to proceed beyond the limits of the metropolis for the purpose of extinguishing fires. In such case the owner and occupier of the property where the fire has occurred shall be jointly and severally liable to defray all the expenses that may be incurred by the F. Brigade in attending the fire, and shall pay to the Board a reasonable charge for the attendance of the F. Brigade, and the use of their engines, escapes, and other implements. In case of difference between the Board and the owner and occupier of such property, or either of them, the amount of the expenses, as well as the propriety of the F. Brigade attending such fire (if the propriety thereof be disputed), shall be summarily determined by two Justices. In default of payment, any expenses under this sec. may be recovered by the Board in a summary manner.
>
> The Board may also permit any part of the F. Brigade Estab. to be employed on special services upon such terms of remuneration as the said Board shall think just.

The subject of the first part of this sec. will be considered under Fire Extinguishment, Expenses of.

Mr. Edwin Chadwick, C.B., in his opening address on "Economy and Trade," at the Social Science Congress held at Sheffield this year, said, referring to inquiries which he had conducted some years previously:

> Of the conditions which are conducive to the spread of fires, I found that there were two—insufficient supply of water, and loss of time in getting at it; and the loss of time in sending for F. engines, and bringing them to bear. To meet these defects—as also to give fresh supplies for household purposes, and doing away with butts and the keeping of stagnant water in cisterns, in which it always deteriorated—I proposed with my colleagues, that water mains should be kept constantly supplied at high pressure for immediate application, simply by attaching a hose to the main near the door, and bringing a jet of water to bear at once for the reduction of fires. The daily use of the hose and jet for cleansing the streets, as in Philadelphia and other cities, and is now coming into use in Paris, on the method we suggested, would have the collateral advantage of an apparatus always ready for the extinction of fires. Of the sinister influences prevalent in the House of Commons, in support of the trading water cos., which prevented its being adopted for the metropolis, it is not the occasion to speak. But our recommendations were carried out at Hamburg, by Mr. Wm. Lindley, the eminent engineer, who planned and executed the re-building of that part of the city which was burned down by the great fire there.

1866.—Mr. C. F. T. Young, C.E., in his *Fires, Fire Engines, etc.*, published this year, under head of "Means for Subduing Fires," says, "Attempts have, it is true, been made at various times to increase the efficiency of water when used in extinguishing fire, by mixing or dissolving some chemical substance or other with it; but however well such a proceeding may have turned out when tried on a small scale as an experiment, say, for example, in the laboratory of a chemist, a few moments' reflection would show that it would be both costly and inadmissible in practice."

1867.—By the Poor Law Amendment Act, 1867,—30 & 31 Vict. c. 106, sec. 29,—the vestry of any parish where there is no town council, local board, or other competent authority, may provide a F. engine, ladder or fire escape, for general use in the parish, and all suitable implements and accoutrements, and for the maintenance and repair of the same, and a proper place to keep the same, out of the poor-rate.

1868.—A competitive trial of several modes of extinguishing fires took place in Oct. this year on Plumstead Marshes by command of the War Office authorities, and under their superintendence. The results were intended to show the comparative merits of L'Extincteur; the Hydropult; and the Hand Pump supplied to the London F. Brigade. The piles for the contest consisted of three erections of timber, each forming three sides of a square 27 ft. 9 in. by 9 ft. 8 in. high, fitted up with shelves stuffed with highly inflammable material from Woolwich Arsenal. These erections having been ignited and allowed to burn fiercely, the order was given to extinguish the fires with the following results:—No. 1. *Extincteur*—The fire attacked by *two men*, and extinguished in 7½ minutes. No. 2. *Hydropult*—The fire attacked by *five men* with an unlimited supply of water, and extinguished in 15 minutes. No. 3. *Hand Pump*—The fire attacked by *seven men* and an unlimited supply of water, could not extinguish the fire nor make any impression upon it. The fire subsequently extinguished by L'Extincteur.

1869.—The Royal Commission on Water Supply appointed in 1867, and which made its rep. in 1869, said: "The expediency and advantage of consolidating the water supply under public control are manifest on many grounds. . . . This measure would much facilitate the provision of water for all public municipal purposes, and in particular for the important object of extinguishing fires." An instance is given in the appendix to the report [BL] of the effect of a deficient water supply on rates, viz. that the prems. on the hop warehouses in the Boro' were increased 75 p.c. from Michaelmas, 1867, in consequence of the inefficient water supply in that district.

About this date Mr. John L. Hayes, Sec. of the National Asso. of Wool Manufacturers, U.S., pub. in the *Quarterly Bulletin* of that Asso., and afterwards in pamph. form : *Fires in Woolen Mills; their Causes and Means of Prevention and Extinction.* A very practical paper, which has been productive of much good.

1872.—Capt. Shaw, in his *Fire Surveys*, pub. this year, says, "Of the ignorance occasionally displayed in the water arrangements of valuable premises it is impossible to speak too severely." There are cases in which tanks are placed either on or under the roof, and distributing pipes of the most approved kind mounted with the best hydrants, leading all over the premises, and no doubt the owners, after going to so much expense, believe that everything has been done to secure the immediate suppression of fires at their commencement; "whereas any professional fireman would see at a glance that the pipes would at best be available only for the lower levels; and that on the upper floors the pressure would not be sufficient to open ordinary leathern hose and force its way through; and that under no circumstances whatever could the water be made available for anything which might happen on or immediately under the roof." He proceeds:

> Instances have even occurred where large sums have been expended in providing rising mains, horizontal distributing pipes, hose, and all other necessary appliances, and yet where it has been entirely forgotten or neglected to connect the internal pipes with the external main from which alone the supply could be obtained; and the owners or managers, after years of false confidence, have been made aware of the omission only on the occurrence of the very casualty for which they supposed themselves to be so well prepared.
>
> Again, it is not unusual in buildings with an abundant supply of water, under constant and ample pressure, and with good distributing pipes mounted with a sufficient number of hydrants or firecocks to find some of the appliances or gear of so bad a pattern as to reduce the means of delivering water very considerably below what they seem to be. For instance, to take the most common case of all, it is frequently found that hydrants or stand-pipes, and sometimes even couplings, fitted with what are commonly known as 2½-in. screws, instead of having a clear circular passage of 2½ in. in diameter, are throttled somewhere inside to a diameter of 1½ in., thus leaving the real waterway very little more than a third of the proper area, while the weight for moving about and the expense in providing are in no way diminished.

Griswold, in his *Fire Underwriter's Text Book*, offers the following practical obs. under head of "Fire Extinguishing Facilities":

> The matter of F. extinguishing facilities available in cases of fire has a marked and important influence upon rates, as tending to enhance or diminish the chances of salvage. These means differ widely in efficiency in different localities. Some have the "Holly" or other waterworks, available at all times; some have the modern steam F. engine, and paid fire department. Others are satisfied with the old-time "machine" and volunteer department, and others still trust to the chances of volunteer "bucket-carriers," and the supply of water from adjacent streams, or wells and cisterns of the neighbourhood.
>
> The introduction of waterworks by which a plentiful supply of water can at all times be relied upon, and the use of steam F. engines, ready for an emergency, have much reduced the price of ins. in places where these facilities are to be found; *though it is questionable if the reduction in prems. by fire offices from this cause is warranted by the actual results to them.* That the aggregate saving of property at fires may be large, and inures to the benefit of property-holders—the uninsured especially—is undoubted. But inasmuch as the underwriter pays for damage caused by *water* used in extinguishing the flames, as well as for any loss from fire itself; and in most instances where there is any salvage, it is because the fire has been swamped out by the free use of water, it becomes a question of some interest whether the water damage is not quite as great as, if not in excess of the fire loss. This is especially the case with stocks of goods, many kinds of which are ruined by water as well as fire. Upon the introduction of the Croton water into the city of N. Y., it was estimated that the damage by water alone reached 65 p.c. of the losses!
>
> In many of the large cities "fire patrols" under the auspices of the underwriters have been organized, embracing a "tarpauling brigade," whose duty it is to be present at every fire and protect the goods by spreading tarpaulings over them in such a manner as to cover them from the water from floors above. And it is wonderful with what rapidity these tarpaulings are spread, or hung upon the walls over the shelves. The salvage thus accruing to the offices amply repays all the outlay for men, horses, and outfit.

In some of the smaller cities of the country, he says, regularly organized companies are in existence for the purpose of saving property at fires, each man being equipped with a large sack and a hatchet. A vast amount of property can be thus saved, not only from the flames, but from thieves and plunderers. FIRE SALVAGE BRIGADES are also estab. in this country. He concludes:

> While it must be admitted that water is handled with great adroitness in the extinction of fires, it is nevertheless a rapacious element, consuming more than it succours; so that underwriters, *as such*, are benefitted by waterworks and steam F. engines *only in so far as they prevent the extension of fires to other contiguous insured property.* . . .
>
> Where all fire extinguishing appliances are wanting, the rate should be made to correspond with the exposures and prob. results as to salvage; and the *line* should be reduced to meet the rate. In manufacturing estab. the internal arrangements for meeting fires should be adequate to any emergency; water and steam pipes should be in constant readiness, and under the control of reliable and trusty persons, without which the risk should be declined.

Foremost among the modern appliances for Fire Extinguishment in the U.S. is the "Holly system" here referred to. It provides water from the street hydrants under great pressure, which is maintained at the city waterworks by the action of a gang of force-pumps, instead of a head of water from a reservoir. In Lockport, Birghamton, Dunkirk, and other cities where this system is adopted, there are no fire engines. Of the force and volume of water obtained by this system, there seems little room for doubt.

Where the water was supplied 65 feet below the street surface, these waterworks raised it and threw it in a perpendicular stream, from a discharge-pipe 3 in. in diameter, 178 feet in the air. About the same height in air was obtained in a trial when the water passed first through 100 ft. of hose. With a steam fire engine, a steady stream could not be maintained at such an altitude; although under high pressure it is often accomplished for a short spurt in competitive exhibitions, but with a discharge-pipe not usually exceeding 1¼ inches. The question as to the value of the Holly system in large cities is, as to the force of the water in hydrants at considerable distances from the waterworks. How much force is lost by friction may be estimated from the circumstance that our best steamers, if using a long hose turned around two or three corners, can scarcely throw a stream 70 ft. perpendicular. A series of valves in the street pipes, operated under telegraphic orders, have been suggested to supplement the Holly system, by somewhat concentrating the pressure of the water in the streets leading from the pumps to a fire.

The Boston *Journal of Chemistry*, Jan. 1872, speaking of *steam* as an agent for extinguishment, said that the brick vault in which its papers were placed for security was in the midst of the flames, rendered extraordinarily vehement in consequence of the large amount of chemicals, alcoholic preparations and other inflammatory materials burned in their warehouse. This vault could only be reached 5 days after the fire. When opened, the contents were found to be in perfect condition. The preventive of destruction was steam. The safe was a brick structure, carried up from the ground through the basement, having two iron doors, the space between the outer and inner door being 14 in. Upon the inside were copper reservoirs holding 12 gallons of water, and on the evening of the fire three wooden pails filled with water were placed inside the vault. (See 1873.)

1873.—In the May number of that able pub. *The American Exchange and Review*, appeared an art., "Steam as a Fire Extinguisher," which contains many remarks and reflections of extreme value to our present purpose. The writer sets out with the general proposition that on account of its abundance and ready availability, no less than its effectiveness when applied in time and properly, water will probably always remain the ally to which we must generally appeal for protection against fire. Granting the fact, he says, there are, nevertheless, circumstances where its employment can only be effected with difficulty, and where much of its virtue must be lost by misdirected application. Such instances are too evident to need enumeration. In addition to this again there are many reasons for believing that there are extinguishing agents which are intrinsically far more energetic in their action than water, and an extensive category of circumstances where their employment would prove of far more avail than the former. To properly appreciate the truth of the last clause, it must be remembered that the essential condition for the maintenance and growth of a fire is, that the combustible material shall be furnished with a free supply of air. Where the supply of atmospheric oxygen is limited to that in the immediate neighbourhood of the burning bodies, the fire will need no interference to shortly smother itself. Where a fire is confined to one or more rooms, from which the access of air from without can be completely shut off, the wisest course to pursue is at once to close every avenue by which the air may enter or escape, and let it severely alone. Here the action which takes place consists in robbing the surrounding air of so much of its vital or flame-supporting constituent, that it becomes unable to continue the process of combustion; when, as a necessary consequence, the fire ceases of its own accord. He continues:

> The thought immediately presents itself, whether it is not possible, in many cases, to imitate this process where fires have gained some headway, and under more unfavourable circumstances, by displacing the air with abundant volumes of some gaseous substance or substances, which being themselves non-supporters of the burning process, shall by their presence indirectly effect that impoverishment of the air, which is obtained directly in the instance cited above as an example. The idea has found practical realization. The employment of gaseous extinguishing agents is by no means a new innovation, though their general introduction to popular use is only of recent date; for a number of mechanical devices for utilizing them have been candidates for public approval for a number of years. Reference is here made to the several portable machines which are so well known under the name of fire extinguishers [FIRE ANNIHILATORS], which it is quite probable owe their extinguishing qualities partly to the fact that they throw upon the burning objects a considerable quantity of sulphurous or carbonic acid gas; but it is highly probable that where such machines are employed for outdoor work, their entire efficiency depends upon the water which they throw upon the flames, and but slightly, if at all, upon the gaseous material which they emit; which may under these circumstances be looked upon simply in the light of the propelling agent for the water. This opinion is warranted by the results of comparative experiments conducted with a variety of extinguishing materials, including amongst others dry carbonic acid, water charged with carbonic acid, and water alone, conducted under conditions as nearly as possible identical. The experiments referred to were made with a fire of highly combustible material, and allowed to gain considerable headway in the free air, when it was found that it was utterly impossible to extinguish it with carbonic acid gas; the gas appeared not to be able to touch the burning surface, but immediately on its delivery to the neighbourhood of the surface, to be carried off with the energetic columns of ascending hot air. With the water delivered by the pressure of carbonic acid gas, and with the water alone delivered from a pump, it was impossible to note any practical advantage of either over the other in extinguishing the flames. Where, however, the fire is within doors, and to some extent deprived of a free supply of air from without, it is probable that the extinguishing quality of the gaseous agent employed in these machines may become of practical importance, since, under these conditions, the fire-choking gas is confined for an appreciable time to the neighbourhood of the burning surfaces. It is under such circumstances that the portable machines find their proper usefulness, and the popularity which they have achieved is well deserved. It is, however, somewhat impracticable to construct machines of this class of sufficient dimensions to meet the emergencies which often arise—and here

their usefulness is at an end. We refer to the case of a fire which has been for some time burning within a building, and which, though not yet fully fed by the free ingress of the external air, has yet made such progress that the employment of the portable gas machines would be altogether insufficient to check it. It is here that steam may render valuable service, and it is to this feature of the subject that we desire to call attention, as one which is worthy of the careful consideration of all practical minds.

No better illustration of the practical value of steam under the conditions stated can be furnished than the following: A factory building, one story in height, and 195 feet long by 32½ feet wide; the upper or roof portion of the place was separated from the parterre space by a close flooring; this roof-space was used as a storehouse for refuse of various kinds, rags, shavings, leather-waste, etc. In this portion of the factory a fire broke out during the night, which unfortunately was only discovered towards two o'clock in the morning, when half the length of the roof was already in flames. As the location of the burning building was somewhat isolated, more than an hour passed by after the discovery of the fire before the services of the neighbouring fire department could be obtained; while meantime the efforts of those about the building to check the spread of the flames had proved so unavailing that the whole of the upper portion of the building had caught fire or fallen, and the flames had already seized upon the lower story, the walls of which had been broken in by the fire corps in their endeavours to quench the flames. In the lower portion of the building there was an arrangement for steam boiling, the boiler for which was located in a separate building, and which had been stopped since seven o'clock the evening previous. After the fire had been raging for some two and a half hours, this boiler was started in operation with a strong wood fire, and as soon as steam was up, a bold carpenter ventured into the burning building—against the command of the engineer in charge of the fire department, who had ordered the demolition of the whole structure—and with an axe broke one of the cast-iron steam-pipes at the first best place. The effect is stated to have been almost instantly perceptible. The whole space was rapidly filled with steam which issued from the shattered pipe under strong pressure, and the raging fire was almost instantly checked in violence, one burning mass after the other was extinguished, and even the heaps of rags, which were then burning under the free air, were put out as the steam enveloped them; so that within half an hour after the admission of the steam, all danger was considered past, and the fire was brought under entire control.

In the particular description of this remarkable circumstance, it is expressly declared that the fire had grown to such proportions as defied all the efforts of the firemen; so that there can be no question that the whole credit of the unlooked for service must be given to the happy introduction of the steam. Indeed, it is declared that the effect was so manifest, that the firemen gradually relaxed their play of water upon the burning building as the delivery of the steam progressed. Here, then, is a case so well substantiated, let the explanations of the action of the agent be what they may, that it proves beyond question that we have in steam a most energetic fire extinguishing agent, excelled by none heretofore brought into play, and that its efficiency may be relied upon, even in cases where the fire has free access to the open air. The writer continues:

> The practical lesson to be drawn from this, and other cases which doubtless will occur to the reader, lies naturally in the suggestion that every factory building, workshop, etc., where steam is employed, should be furnished with a system of pipes leading to the several rooms or stories, by which, in case of accident occurring at any time, steam could be instantly or shortly thrown in volumes into the threatened quarter. Such an arrangement as is here suggested requires no considerable outlay of money, no attention when not in use; nor does it occupy any considerable space; while, should occasion arise, its presence and almost instant availability would doubtless often be the means of checking dire calamity.
>
> The recognition of the value of steam as a fire extinguisher, though not new, is still by no means general; and the fullest discussion of the subject, combined with the widest publicity to the same, would prove of great public benefit. Here and there only, in large establishments, where additional safeguards besides the aid relied upon from the fire department are deemed necessary, such an arrangement as the one named above is to be seen. In one of the largest establishments in Philadelphia, recently described very fully in one of the departments of this Review, one of the most complete systems of this nature is present; though, happily, occasion for testing its efficiency has not yet presented itself. Here a series of independent steam pipes lead from the boiler room to each of the many departments of the works; while one of the most open and readily accessible positions upon the ground floor is chosen as the place from which their service shall be commanded. At this place the pipes, some half a dozen in number, are painted, each with a special colour; and for additional security against the possibility of a mistake in the bewilderment of the moment, the name of the department to which it leads is printed distinctly upon each of them, and the delivery of steam is controlled by the turning of a valve with which each pipe is here furnished. Should a fire break out in any part of the extensive workshops, day or night, upon the signal being given, a deluge of steam could be poured in upon the endangered quarter at a moment's warning. Such an elaborate arrangement as this is to be recommended to all large establishments, since it affords, in the present state of our acquaintance with means of fire extinguishing, the most perfect protective system which has been devised. For smaller establishments a less elaborate or complicated arrangement would amply suffice, the necessities of each case affording room for the exercise of judgment on the part of those interested. Nor is it the writer's opinion that the system here defended should find its entire application in the protection of factories and workshops. For churches, theatres, and public buildings of all descriptions, such an arrangement might prove of incalculable value; and since in many large buildings of this class steam generators are present for heating or other purposes, the introduction of the system of safety pipes could be managed without objection.

We have dealt thus fully with this able art. for two reasons: the first because it appears to contain a practical solution of fire extinguishment, available almost to hand by nearly all the great manufacturing cities of the world; next, because it proceeds from the pen of a writer who has long been familiar with the practical importance of fire extinguishment. Whether the plan can be applied to dwelling-house risks, as a recent German writer has advocated, we do not care to inquire. It is not these that as a rule require any special protection. (See 1874—1875.)

The *Boston Advertiser* gave an account of some experiments made with *steam* some years previously. They were conducted in a large mill through which suitable pipes and connexions had been laid, communicating with the different rooms. A box of cotton waste was ignited in the second story, making a fierce blaze. Steam was turned on, filling first the upper stories, and finally reaching and completely extinguishing the blaze. After trying this experiment with dry cotton several times, lamps were lighted and placed in various positions on the stairs and floor, with the wicks very high, producing strong flames. It was remarked that each lamp, as the steam reached it, was immediately put out. Steam, it was shown, could be let into any and every part of the mill in much less time than water could be, with the best-arranged water supply. In case of fire, the steam reaches the surface upon every side, and in all positions, following up, so to speak, the very crevices into which fire would otherwise find its way; so that it answers as a complete extinguisher.

At the National Convention of the Chiefs of Fire Departments in the U.S., held at Baltimore this year, various practical suggestions in regard to Fire Extinguishment formed part of the programme for consideration. It will be more convenient to deal with the entire programme under FIRE PROTECTION.

At the International Exhibition held at *Vienna* this year, the appliances for Fire Extinguishment constituted a very prominent feature.

In 1873 Mr. Joseph Bird, of Boston, U.S., pub. in N.Y.: *Protection against Fire, and the Best Means of Putting out Fires in Cities, Towns, and Villages; with Practical Suggestions for the Security of Life and Property.*

1874.—Mr. A. Hildebrand, at a meeting of the Manchester Scientific and Mechanical So., read a paper on *The Application of Steam as a Fire Extinguisher*, and gave a detailed description of a self-acting apparatus which had been constructed for the purpose of extinguishing fires by steam. The subject, he said, is not a new one. In 1860 some French engineers made a series of experiments, but they were unsatisfactory, and further tests were abandoned. If steam could be made available, it might save a great amount of property, and could be utilized with a limited amount of outlay. It has a two-fold operation upon fire—as an intercepter of air, and as a cooler. Its cooling power is greater than water, and it does not offer the same facilities for the passage of air as water. Another important faculty of steam is its smothering power. Mr. Hildebrand summed up the advantages of steam as follows:

> That the arrangements for its application being made beforehand, it is ready for use without a moment's delay; that when the arrangements are once properly made, they are almost self-acting, one man being able to control the whole without the slightest difficulty; that its use does not give increased facilities to the access of air, as is the case when water is used, and when it has to be carried into the apartments where fire is raging, by means of buckets, hose, etc.; and that it entails no danger to life or limb of the operator; that it does not, in its successful application, destroy property contiguous to the fire, as does water, which is necessarily thrown with considerable force; that when provision for its application is once made, no further appliances or machinery are required; that its action is certain and unfailing in all cases where it is possible to apply it, since it operates upon all kinds of combustibles with effect; and lastly, that provision for its application is very inexpensive.

The use of steam required, of course, a system of piping extending throughout the building, in connexion with the boiler, and a simple application of electricity opened valves which conveyed the steam into the room where the fire existed. A model of the apparatus referred to was exhibited, and it was claimed that it could be placed in mills, and other manufacturing establishments, at a reasonable cost.

A Committee of the Common Council of the Corp. of Lond. reported that it was desirable to estab. hydrants, to be kept constantly charged, at every 60 yards in the streets of the city, in view of maintaining an efficient supply of water for the rapid extinguishment of fires. [FIRE PROTECTION.]

The editor of the *Baltimore Underwriter*, a gentleman of great accomplishments, educated to the medical profession, and an enthusiast in the matter of fire extinguishing appliances, offers the following obs. in support of carbonic acid gas as a fire extinguisher:

> The extent to which large amounts of valuable property, either in merchandize or in valuable machinery, are concentrated at our commercial and manufacturing centres, renders some certain and efficient means of extinguishing fire one of the great necessities of the day. The modern fire departments, with all their improved appliances, while they have done much, have not solved the problem. They do not check conflagrations with any degree of certainty, and often cause extensive damage by the free use of water. The attention of some of our inventors has been turned to the devising of fire extinguishers, which owe their efficacy to the use of a small quantity of water impregnated with carbonic acid. This gas, composed of one equivalent of carbon and two of oxygen, is one of the most active extinguishers of fire known to modern science. Neither fire nor life can exist in an atmosphere containing from 10 to 15 p.c. of this element. It is the "choke damp" which is found in unused wells and shafts, and its presence is detected by the instant extinguishment of a light lowered into it. If any method could be devised by which this gas could be made immediately available, it would do much towards checking conflagrations. This gas is easily procured by mixing

> hydrochloric acid, diluted with three or four parts of water, with marble dust, or any other carbonate; and being elastic, it might be stored in strong metallic vessels.
>
> In large manufacturing establishments, and in stores and warehouses which contain valuable stocks of merchandize, receivers could be kept filled with gas for instant use, with large generators to keep up the supply. It could be distributed through the building, or to any given floor, at an instant's notice, through perforated pipes, which need be but little longer than those used for conveying water or gas for illuminating purposes. The air would soon, if the building was closed, become so mixed with carbonic acid as not only to prevent the spread of fire, but also to completely "put it out"; and that, too, without any of the damage incident to the use of water. An apparatus of a similar character could also be used in vessels, and in the discovery of a fire in the cargo, the air in the hold could be soon thoroughly mixed with this gas, and all danger of disaster averted.

The *Scientific American* of this year considers the larger question of how to stay the ravages of fires when they have obtained such a hold in towns and cities. It says:

> Western settlers, when a prairie is in flames, find that the only and best means of protecting menaced property is to plough up the ground around the latter for a width of several yards. Over this the fire cannot pass, for the simple reason that it finds nothing upon which to feed. The sole effective method by which the ravages of any great conflagration can be checked (and the truth was amply demonstrated in Boston and Chicago) consists in following the same plan; and in crowded cities, by destroying buildings adjacent to the burning locality, the latter can be entirely isolated from other portions, so that the fire may be confined to a limited area, on which may be concentrated the entire force of the extinguishing apparatus. The value of this heroic remedy is becoming widely recognized, and in this city [New York] a corps of sappers and miners has been organized, comprising 56 persons, selected from the officers of the fire brigade, who are being regularly instructed in the use and nature of explosives, electric fuses, etc.

The writer then proceeds to detail some experiments of the organization which had recently taken place on Ward's Island. A number of brick walls were erected, of various thickness, having a depth below the ground of 1 ft., and built upon a timber foundation. The first wall attacked was 20 in. thick, and the object of the experiment was to show the comparative effects of mining powder and dynamite suspended in cubical boxes against it. Fifty pounds of mining powder barely blackened the walls, while six pounds of dynamite in a box 5 ft. by 5 in. cut a hole through the wall of about the size of the box. Then experiments followed in cutting down masonry varying in thickness from 8 to 36 in., with cartridges containing from one to five pounds of dynamite, the effect being to divide the walls at the marked places with great accuracy. Floors were also torn up with the same powerful material, and finally seven walls were blown to fragments by a continuous line of cartridges arranged in rubber tubes and covered with bags of sand.

The trials were mainly very successful, and showed that by the use of explosives not only could whole buildings, during great fires, be quickly demolished, but, in smaller conflagrations, the dynamite cartridge could be advantageously used in gaining rapid access to edifices through walls. This proceeding now requires lengthy labour with axe and pick, the flames in the time thus lost often making serious headway.

A new apparatus for extinguishing fires was exhibited in the repair yard of the New York Fire Department. The apparatus is called a "Distributor," and consists of four nozzles set at right angles to each other, which are attached to a band allowing rotary motion. The band is put upon a telescopic pipe four feet long. The band revolves when water is passed through it, and the water is scattered in every direction through the nozzles. The invention, it was thought, would be of great use in putting out fires which have not made much headway, inasmuch as all parts of a room can be reached by the spray from the apparatus.

The Committee of the National Board (N.Y.) on the "Origin of Fires," etc. in its Rep. for 1874 gives the following:

> *Sprinklers.*—The most complete system for the application of water for extinguishing fires heretofore in use, and the most effectual and certain in its operations, has been a series of perforated pipes, supplied by a reservoir or force-pump, usually termed sprinklers. These, like the steam F. engine and force-pump, have proved powerful aids in preventing the spread of fires, *yet as a rule, when applied in full force, damaging all the property on the premises where used, so far as it is susceptible of being damaged by water.* The advantage of the sprinkler is, that it can be put in operation almost instantly after the discovery of a fire; it requires no arranging of hose, and wastes no time in going to a fire. It is on the spot subject to the will of the watchful supervisor of the premises.

The Committee proceed to speak of a patented improvement on this principle, known as *The Automatic Fire Extinguisher and Alarm*, which "appears to be nearly all that is required: 'an apparatus in all places sufficient of itself, always ready, always there, to act entirely by itself, and which cannot get asleep or make blunders.' As is usual with all valuable improvements, it is so simple as to be understood by any one. It works automatically, and spreads no water except where the fire is, and will put out a small or large fire equally well."

This improved sprinkler is formed by a series of pipes placed near the ceiling of the room to be protected, consisting of a main pipe in the centre connecting with a reservoir, with side branches or arms at proper intervals, to which are attached small pipes of half an inch in diameter, terminating in a finely perforated cap, "so as to throw a very fine and dense spray on everything, and filling the air very completely for a radius of seven or eight feet, thus rendering the existence of any fire in that space impossible." These pipes are so arranged as to have one of these perforated caps at each interval of 10 ft. in the length and breadth of the room; thus supplying one of them for every 100 square ft. of flooring. The *automatic effect* is produced by placing a light metallic cap over the rose sprinkler, fastened in its place by being soldered to the shoulder of the sprinkler with a metal fusible at 155° Fahr. This admits of water under constant pressure being kept in the pipes at all times. On the occurrence of a fire under either of these caps, it will at once melt the solder. The pressure of water in the pipe removes the outer cap, and the water escapes in spray directly upon the fire, "and as experience proves, arrests it then and there without injury to property in other parts of the room." By a valve in the main pipe, with a lever attached, an alarm is given either by a bell or a steam whistle. The first motion of the water caused by the opening of one or more of the caps, opens the valve, and gives the alarm ; the whole operation being automatic. "In fact, when emergency for its use arises, it sets itself at work, and then tells you what it is doing."

The *Providence Journal*, Dec. 17, 1874, gives the following account of an experimental working :

> A building some 40 ft. long by 20 wide and 12 high had been erected, . . . which was piped with 10 sprinklers 10 ft. from each other, 5 feet from the sides and end of the building. The floor was covered with kindling wood the entire length, and to the depth of 18 inches, in which a fire was started . . . about 8 ft. from one end, and in the centre. The crowd watched the progress of the flames with interest, and 3 minutes from the time the flames showed themselves the alarm was sounded, indicating that at least one sprinkler was at work. The fire gained no further headway, and in a very short time was out. The water was shut off, and after the smoke and steam were out of the building, investigation showed that five caps had melted off, and that the fire had burned only the wood round which it had been lighted, to a diameter of perhaps 5 ft., not even charring the walls or ceiling. The 4 caps nearest the fire had been melted off, and one some distance away, showing that there was a current of air in the room of sufficient heat to melt the solder. In that part of the building distant from the fire, the caps remained intact, and no water was spread in that vicinity. The caps were again put on for another test. This time the fire was built in 8 places, in the centre, ends, and sides, and the windows left out, to allow a good draft, and give it a "fair trial" as some of the doubters suggested. The flames rolled up fiercely, and the building had the appearance of being all on fire, but in a few moments the alarm was again sounded, and again was the fire subdued, notwithstanding it was in so many different places and throughout the entire building ; and the experiment was pronounced a perfect success even by the firemen present, who are generally constitutionally sceptical about any new improvements in extinguishing fires.

In a later experiment one particular wooden cotton frame among a number was fired, and the fire was extinguished without damaging the other frames.

1875.—Mr. J. A. Coleman, C.E. (U.S.A.), read a paper before the So. of Arts on : *An Apparatus for the Protection of Buildings and Ships from Fire, and for the Ventilation of Ships.* He said, Engineering ability had been successfully brought to bear upon almost every other great problem ; but it was evident that far less thought had been devoted to this important subject. True, we had made some important improvements in the substitution of steam for manual power in working our fire engines, and in some minor details ; but "the improved engine of to-day cannot throw an effective stream of water to double the height attained by the first F. engine." "All we have gained over the old engine is the ability to throw a larger volume of water continuously to only a moderately increased height. To this extent only had the situation been improved. *The theory for putting out fires in all essential features remains unchanged*, while the difficulties of the old system have increased." In the majority of cases fires burn themselves out, leaving only tottering walls, and the useless *débris* of a fire. What then, he asks, is the underlying trouble with all our fires in buildings and ships? Simply a fault of engineering. It is the failure to put a little water in the right place at the right time—it is the failure to strike a fire dead in its incipient stage. He proceeds:

> Any system to be successful in extinguishing fire must be capable of prompt application. It must also be able to do the least possible damage by using the smallest quantity of water necessary to accomplish its purpose. A bucketful of water in the right place at the right time is worth more than 20 tons of water 20 minutes later.
>
> Experience has proved that there is no such thing as an absolutely practical fire-proof building. If walls were constructed 8 ft. thick, the windows and doors cannot be equally thick, and the building, if filled with combustible goods, will be destroyed, precisely as iron-ore and limestone sandwiched with fuel are reduced in a smelting furnace. It makes but little difference how we construct a few exceptional buildings in a city already composed of those that will burn. Nothing can withstand fire when there is enough of it. The practical principle, therefore, of safety, is to prevent a great fire by a prompt means of extinguishment. Therefore arrange buildings or ships with appliances to instantly wet them with water, and it will be impossible, humanly speaking, to destroy them by fire. Now, how do we attempt to do this, and how may it be done? Within the past 50 years we have advanced from passing buckets along a line of men from a distant supply of water to conducting the water near to buildings through pipes in the streets. We have done so much towards prompt application ; but the apparatus to conduct that water from those pipes in the streets to the top of high buildings must be waited for until dragged from distant parts of the city. In the mean time the fire is gaining headway and violence with each minute of delay. Those invaluable first minutes are lost; more time is then lost in erecting ladders and dragging up heavy hose; then windows are broken in, giving the fire air ; flames and smoke burst forth, and the blinded, half-suffocated firemen pour tons of water where fire does not exist, and it goes in cataracts upon valuable property below, while a comparatively small quantity extinguishes the fire. It is a necessity of the case. A fireman cannot tell in a building filled with smoke the exact location of the fire, but must strike more or less at random. Many times more damage is frequently done by water than by fire when the fire is comparatively small ; and according to Mr. Braidwood, and the testimony of all familiar with the subject, no possibility exists of extinguishing the fire when it is great.

The plan he proposed by way of remedy is the following : Iron stand-pipes to be put upon buildings, one going to the roof, and the others to the separate stories. Then perforated branch pipes to be laid at suitable distances apart, over the roof and under the eaves, to distribute water like a rain storm over the entire top and sides of the building, in case heat and flames were attacking it from another edifice on fire. Perforated branch pipes also to be fixed upon the ceiling of each story, in order to strike the top, sides, and floor with small jets of water. Each story has its own stand-pipe and valve or cock—the latter being operated upon from the side-walk. All the cocks to be placed in an iron box let into the wall of the building, always locked to prevent tampering with by improper persons. The author proceeds:

> By this apparatus it will be seen every square foot of the exterior and interior of a building could be commanded under all circumstances by a man quietly manipulating the proper valves from the side-walk, without the necessity for going near the danger. If there should be a sufficient head of water, the distributing apparatus described would be connected with the mains in the street, and its control placed in the hands of the city authorities. Should there not be a sufficient head of water, there must be steam boilers and pumps [for the district]. . . .
>
> On the discovery of a fire, a telegraphic signal would summon the chief engineer on duty, a man of judgment and brains, to take charge of the fire. If the fire was beyond the small means of extinguishment usually employed, such as buckets, extinguishers, etc., he could first turn steam into the room on fire [it is part of his scheme to supply steam for working lifts, etc.] if it were sufficiently confined and small, and smother the flames with but little damage to the contents of the building; and if too late for that, he would have the last sure resort of water, with which he would give the fire a short quick drench, and then close the valve. There need be no panic nor confusion. Controlling the apparatus with the same ease and certainty with which an engineer down in the bowels of a huge ship controls the movements of her ponderous machinery, it would be the man, and not the fire, that was master of the situation.
>
> It will be very apparent that if every square inch of a room was instantly wet, the fire would be struck and extinguished, and with the smallest possible quantity of water. The prompt closing of the cock when the work was done, would save the flooding of the stories below, which is now a great fault of our present method. But the main idea in this plan consists in having it upon a large scale, for the advantages of economy, system, and safety. It would not be sufficient thus to fit only a few buildings isolated from each other in a closely packed district. In order to present a bulwark to arrest a large conflagration sweeping towards it, the plan should be general in the district protected by this system.

A discussion followed, in which a number of practical engineers took part; but the proposal was not very warmly adopted. It will have been seen from the earlier part of this art. that the proposal has very little which is new about it. (See 1864–5, and 1874.)

During the discussion at the So. of Arts last referred to, Mr. W. Swanton, Chief of the Lond. Salvage Corps, said that from 25 years' experience in attending fires, his opinion was that in order to do any good you must *strike the fire sharply and immediately with abundance of water.* The best appliance, in his opinion, was a rising main on each staircase, with a branch hose on every landing, so that in the event of a fire the water could be immediately brought to bear upon it. This plan is now being very much adopted in public buildings.

A Correspondent in the *Manchester Examiner* suggested that every pillar in a mill or manufactory might be a water-pipe; and that each of these should have in various places plug holes stopped with gutta-percha, in plugs or bungs, or with such connexions as will melt when fire approaches them. "Smaller pipes might also be made to traverse between the columns, made of the same material, and water be made to meet fire when it comes at a very critical and valuable moment."

Recent disastrous fires in the U.S. have shown that such appliances as "sprinklers" are practically useless unless the material of which the pipes are composed and the manner of their construction are carefully looked after. In some cases there the pipes have been found to be so frail that they split under the pressure of the water; in others they were melted by the heat. Nothing but wrought-iron pipes with strong elbows and peculiarly drilled orifices are of any substantial avail when the emergency arises.

Among the latest suggestions for fire extinguishment is the use of sulphur. M. Tellier, of Paris, claims the discovery, and seems to consider it especially adapted to the extinguishment of fire on board ship. In this view *Les Mondes* suggests that brimstone should be carried on board every ship for use in case of fire. Half a hundredweight (30 kilos) of brimstone would be sufficient to abstract the whole of the oxygen from 3531 cubic feet of air, thus rendering it unfitted to support combustion. In a closed space like a ship's hold, the sulphurous gas produced by the burning of the brimstone would penetrate where water from the decks could not be brought to bear, and the density of the gas would prevent its rising or spreading if care were taken to close the hatches carefully with wet sails, etc. It is suggested that the brimstone should be made up in the form of large matches, the ends of which could be passed through scuttles prepared for them in the decks or bulkheads in case of need. It is asserted that 15*s.* or 20*s.* worth of brimstone would be sufficient to stifle and annihilate all traces of combustion in an air space of 35,000 cubic feet.

The application, apart from what we regard as its unfitness on account of its injury by impregnation to many cargos of various kinds, can hardly be claimed to be new. The Pomeranian peasants long since knew how to put the fire out by means of the fumes of sulphur, when their chimneys caught fire. In fact, this property of sulphur has long been understood by many who are familiar with fire ins. The chemical qualities of sulphur are, however, such that it cannot be made use of practically, for ordinary purposes, as a fire extinguisher, except, it is true, when the fire occurs in a chimney.

A manufacturer, writing to the *Manchester Examiner* in the early part of the present year, furnished the following important testimony to *Steam* as an extinguishing medium.

> When my mill was burning, having taken fire while at work, we saved an entire department by breaking a steam pipe, and keeping the room filled with steam so long as it was in danger. Not a

drop of water touched it. While the mill was burning, the stokers were firing the boilers, and not a mark of fire was on the walls or machinery of the room. Nothing would be easier than so to arrange the steam pipes in and about a mill that steam could be let into any one room or into every room, working all the valves in a place of safety. The mere fact that weaving sheds are actually and purposely provided with steam from the boiler as a part of the manufacturing process, shows how easily it could be thrown into any room. The apparatus would not be liable to get out of order by any wear, and periodical examination would be the easiest thing practicable.

It was stated, at a discussion at the So. of Arts, to have been shown by Prof. Gardner "that in some cases steam even added to the strength of the fire, instead of putting it out." [Journal of the So. 5 Feb. 1875, p. 224.]

Messrs. Sanderson and Proctor have patented an invention for facilitating the use of *Steam* as a F. extinguisher. Its nature will be understood from the following description of experiments made near Huddersfield in the early part of the present year, and reported in the *Engineer*. The self-acting arrangement consists of a number of thermometers, which serve as contact makers in an electric circuit, and the apparatus proper, which turns on the steam valve by releasing a pin on the wheel, and permitting the weight attached to the same to turn it round. Contact can be made at any given temperature, the fire simply raising the mercury in the thermometer to the desired point. Lower Aspley Old Mill, which has been used in the woollen trade, is at present empty, and in a condition highly favourable to be burned down, from the quantity of oil, grease, and dust deposited on the floors, walls, pillars and elsewhere. A quantity of firewood and shavings had been placed on the floor of the bottom room, which measures 75 ft. by 22 ft. by 14 ft. high. The fire was lit exactly at half-past three, producing immediately a large body of flame, and not quite a minute elapsed before the apparatus turned on the steam. For the next two minutes the fire continued to burn unchecked, but then it became less, and in another two minutes no more flame could be seen. When the steam, which was 40 lbs. in the boiler, had been going into the room for fifteen minutes, it was turned off and the door opened; but a well-known crackling inside told that the fire was burning up again, so the door was closed, and the steam turned on for twenty minutes longer. This was quite sufficient to remove every trace of fire, and, after the room had been aired for about half an hour, the whole of the interior was perfectly dry, and no trace of moisture could be detected, a circumstance which may be easily explained, and one of great importance to machinery in rooms where steam has been used as an extinguisher. When we say moisture, we exclude one or two pools of water in a low part of the floor. An artificial wooden floor upon which the fire had been placed was very slightly charred in one place, and the quantity of firewood burned was very small. The trial was so far a success, both as regards the apparatus and the agency of steam as an extinguisher.

A number of mills in the North of England are making arrangements for the use of steam in case of fire; and the *Mutual* F. Asso. in Manchester is aiding in the extension by reducing the rates in all mills so protected. The steam as it enters the building gives an alarm by sounding a whistle loudly.

The *Nautical Gazette* still more recently reports the following instance of the practical application of *steam* to fires on board ship. The *Prairie Bird*, under command of Capt. C. Sanford, left New Orleans June 1, bound to Liverpool, her cargo consisting of 1824 bales of cotton. When 50 miles south-east of the Sand Key light, the vessel was found to be on fire on the starboard side, near the forward house. After caulking hatches and taking other precautions to prevent the spread of the fire, the vessel was kept off for Key West, where she arrived next morning. The wrecking steamer Cora immediately proceeded to her assistance, and on arriving alongside it was found that the fire was still confined below. It was then determined to make an effort to extinguish it by introducing steam into the hold, for accomplishing which the Cora is fitted with the necessary appliances. The barque was towed up the harbour, and anchored in four fathoms of water, and after boring test holes in the deck, to ascertain the exact location of the fire, steam was introduced from the boiler of the steamboat through a hose, having, on the end entering the deck, a piece of 2½-in. iron pipe. In about two hours steam began to issue from the various cracks and holes fore and aft, which openings were carefully caulked as fast as discovered. Steaming was kept up until the following morning, when the fore and aft hatches were opened. No signs of fire were visible, but, as a matter of prudence, the hatches were again closed and steaming kept up all day and the following night. On the main hatch being again opened, and steam shut off, it became evident that the fire was subdued. The steam had by this time penetrated every part of the vessel, even coming up through the pumps. Steam was again put on, and the next morning the main hatch was opened again, and the men began breaking and hoisting out the cargo, working in the direction of the fire. After taking out 55 bales, the seat of the fire was reached, and all burnt bales were hoisted on deck, seven of them still smoking when taken out. With the exception of these bales, the fire was entirely extinguished, it being ascertained that the steam had penetrated nearly through the bales. Hoisting out was continued, and it was found that the fire was all out beyond a doubt, and finally the vessel was brought to the dock and began discharging. No salt water was used except for a period of about fifteen minutes, when a little was thrown over the tops of the bales below. About 50 bales in all were damaged by fire, the deck nearly burned through, and two knees and beams damaged. The barque was to repair immediately and proceed on her voyage.

The *Chronicle* of N. Y., from which we quote, adds: "Heretofore there has been but one method of extinguishing fires on cotton-laden vessels—that is, to pump them full of water, or to scuttle them, thus entailing great expense, even if the cargo is saved. This case will go far to prove the utility of steam for the purpose of extinguishing fires, not alone on board cotton-laden vessels, but on vessels with general cargos, and we wish to direct the attention of owners, shipmasters, and underwriters to the facts presented above."

The latest development is again carbonic acid gas under the patents of the Wallace-Tucker Fire Annihilating Co. Lim., just founded. The principle embodied in the patents is, that immediately the temperature of a room is raised by a fire to a certain degree of heat—which can be regulated beforehand, and made, if required, even as low as 80 degrees—a composition evolves gases which extinguish the fire.

The composition, it is said, is simple in the extreme, and will act equally as well 20 years after being fixed as 20 days. As it only acts by the rise in temperature, caused by the fire itself, no gas is evolved until the very moment it is required to extinguish the fire. Sufficient composition for a room 20 ft. long, by 12 ft. broad, and 9 ft. high, can be manufactured for less than half-a-crown, and will be contained in a space of one-tenth of a cubic foot; hence it can be supplied at a price so cheap as to make its use universal, and still allow a singularly large margin for profit. Hundreds of trials are stated to have been made, in which the fire has been annihilated in its most incipient stage, before any appreciable damage has been done to either goods or buildings, as the gases do not injure the finest fabric, or the brightest steel.

Mr. T. W. Keates, Consulting Chemist to the Metropolitan Board of Works, writes under date 4th May, 1875:

> On the 29th of April I witnessed a trial, on a considerable scale, of the Wallace-Tucker method of extinguishing fire within a building, by charging the atmosphere in which such fire is occurring with carbonic acid gas.
>
> There are two features in this invention which appear to me novel: the first is, the charging of an atmosphere with so large a volume of carbonic acid that it ceases to be able to support combustion in any part of the apartment, the carbonic acid itself being produced by the burning of carbon mixed with a proper proportion of nitrate of potash or saltpetre—a sort of inexplosive gunpowder, so to speak; and, secondly, the making of this result to depend upon the effect of the fire itself, which, by heating the air of the chamber or warehouse, will determine the combustion of the carbon and the development of the carbonic acid by primarily causing the inflammation of a sort of fuse attached to the carbonaceous mixture, which fuse takes fire at a very low temperature, and then ignites the mass of carbon. The original fire is, in fact, the means of setting in action the force which destroys it, making the operation automatic in a certain sense.
>
> In the experiment in question, a wooden house containing about 1700 cubic feet of air had placed in it a considerable heap of shavings, which were covered with billets of wood, and over the whole a quantity of petroleum was poured. In the upper part near the roof of the house, a cake of the mixed carbon and nitrate of potash, weighing about 9 lbs., was placed. The shavings were then set on fire, and, being saturated with the petroleum, blazed up fiercely; the door was then closed, and through a window it could be seen that the flames were rising high in the inside of the house. In a few moments it was observed that the combustion of the carbon mixture had commenced, and then a large quantity of gas was evolved, so much that it was driven out forcibly through the joints and imperfect parts of the rough wooden structure, and almost immediately the flame was subdued and extinguished; the atmosphere that was artificially created by the combustion of the carbon was quite unfit to carry on the burning process, and the fire died out for want of aliment in the form of oxygen gas.

While the preceding has been passing through the press, we receive from across the Atlantic some details of the "Connelly F. Extinguisher," and experiments in the neighbourhood of Pittsburg, as to a special branch of extinguishment.

The first experiment was to test its applicability to the protection of oil tanks, and consisted in igniting several barrels of crude petroleum contained in a large tank and then injecting the carbonic acid into the flames through jets in pipes that surrounded the burning fluid. Although the flames shot up to a great height, generated an intense heat, and were blown about in a threatening manner by a strong wind that was blowing at the time, it was scarcely three seconds after the engineer turned the valve that the flame, smoke, and gas all ascended together from the surface, leaving it as placid as before the application of the fire. Nothing could be more complete, not a vestige of flame remaining, although but a small portion comparatively of the combustible material had been consumed. This was done again and again, each successive operation increasing the wonder and admiration of the spectators. Having left no room to doubt its ability to put out oil fires, the extinguisher was next applied to a frame shed from which issued an immense volume of flame. Its effect on the burning wood was almost instantaneous. It was then shown how the gas might be forced from the receivers through pipes running two or three hundred feet under the earth, thence ascending to the roof of the high buildings.

The features of this wonderful appliance that impressed us most (says the Pittsburg *Commercial*) are the forces with which gas and steam, gas and water, or gas alone, can be sent through pipes sufficiently long to reach to the top of the highest building, and the almost incredible rapidity and ease with which it conquers the hottest fires and extinguishes the most inflammable substance. No one who witnesses these experiments can fail to be impressed with the conviction that this invention must supersede every other appliance for the extinguishment of fires, whether in oil tanks, steamboats, or buildings.

We have endeavoured in this art. to bring together, under one view, all the otherwise scattered proposals for F. Extinguishment. Many of these deserve the attentive consideration of F. underwriters. Fire Prevention and F. Extinction are the two great problems they have to solve.

After a careful consideration of the whole question, we have arrived at the following conclusions:—1. That either *F. Annihilators* or ordinary *hand engines* will be of the greatest value at the inception of a fire. 2. That when an internal fire has got some hold, either *carbonic acid gas* or *steam* may be used with great advantage in any building capable of being very nearly or entirely closed, and also on board ships. 3. When a building is fired externally, or when a general conflagration has resulted, then an abundant *water supply* is the only ready and effective remedy, supplemented as may be necessary by the removal, by explosives, of buildings, in view of stopping its advance.

FIRE EXTINGUISHMENT, EXPENSES OF.—The question of the expenses consequent upon the extinguishment of fires comes before the fire underwriter in several forms, and is indeed "a very large item in the expenditure of ins. offices." Mr. Bunyon states the practice with clearness: "The usual condition is, that the co. will pay a rateable proportion of the expenses according to the amount of their interest as insurers in the property endangered. Where there is a condition to this effect, a considerable loss may arise over and above the amount insured by the pol. If there is no such condition, and no orders are given by the co. through its agents, *the sum insured will be the limit of its liability*, and the expenses will fall on the owner of the property, or, if he can repudiate the liability, upon the person giving the order for their being incurred. *No voluntary assistance given by third parties will entitle them to claim payment as of right;* although it is usual to compensate them for their exertions."

The preceding applies to cases in ordinary practice; but sometimes extraordinary cases arise; as where one or several buildings are destroyed to stay the spread of fire —who then is responsible? It is clear that the question requires to be considered in some detail.

The Special Local Acts for various towns contain provisions on this subject by no means uniform. Some of these we shall notice. Mr. Bunyon found in some, clauses inserted to throw the extraordinary expenses incurred by any fire, whether within the limits of the Act or not, "upon the respective ins. offices who have insured against fire the property endangered, or to which assistance has been extended, and amongst the owners of uninsured property endangered, or to which assistance has been given, in fair and equal proportions;" with power to two Justices to settle any such apportionment in a summary way.

1821.—The Police Act of *Glasgow*, obtained this year, empowered the Commissioners to make a charge to the extent of £15 for every fire, or alarm of fire, at which the engines turned out, within the bounds of "the Royalty"; and as the Act did not oblige them to send their engines out of these bounds, the ins. cos. were left at the mercy of the Police Commissioners in all such cases. Finally, in 1823, a compromise was made, by which the insurance companies bound themselves to pay all the usual charges, and one-half more, for tear and wear. In connexion with the fire at the cotton store of Mr. Donaldson, on the 20th of November, 1829, we have it on the authority of Mr. F. G. Smith that the charge for attendance of engines and police was no less than £424 7*s*. 3*d*. (See 1843.)

1842.—By the Act for the Improvement, Good Gov., and Police Regulation of the Borough of Liverpool, obtained this year, the onus of the cost of fire extinguishment is to be distributed amongst the ins. offices concerned, and the owners of *uninsured* property which is injured or endangered, in fair and equal proportions.

1843.—Under the Consolidated *Glasgow* Police Act—6 & 7 Vict. c. xcix.—it is enacted "that from and after the passing of this Act, the proprietor or occupier of any dwelling-house, shop, warehouse, or other house or tenement, or any timber or other yard, or other premises or place within the limits of this Act, in which a fire breaks out or takes place, shall pay to the collector or treasurer . . . under this Act a sum of money *not exceeding* £15 sterling, to be expended under the directions of the said board in paying premiums or wages to the firemen or other persons who shall have assisted in extinguishing such fire and in defraying the other expenses necessarily incurred by bringing to the spot the F. engines, and the supply of water or otherwise: provided always, that where the actual expense does not amount to £30, only one-half of the actual expense shall be charged, and in no case a higher sum than £15.

1844.—By the *Manchester* Gov. and Police Regulation Act, already cited in our art. F. BRIGADES, a proportion of the expenses of extinguishment are thrown upon the owners of the property in connexion with which the fire occurred.

1847.—The Town Police Clauses Act, 1847—10 & 11 Vict. c. 89—enables the Commissioners (sec. 33) to send engines with their appurtenances and firemen beyond the limits of the Special Act for extinguishing fire in the neighbourhood of the limits; and the owner of the lands and buildings where such fire has happened shall defray the expenses. Under this sec. a case has recently been tried. (See 1875.)

1862.—Under the *Salford* Improvement Act of this year the expense of fire extinguishment is thrown upon the ins. offices, and the owners of uninsured property, in fair and equal proportions. The clauses of this Act bearing upon this point have already been given under F. BRIGADES.

1865.—The Metropolitan F. Brigade Act, 1865—the 28 & 29 Vict. c. 90—throws the duty of protecting the metropolis against fire upon the Metropolitan Board of Works; the cost (beyond the contribution of the ins. offices and of the Gov.) is borne by a rate levied over the metropolitan parishes. Where the engines, etc., are sent beyond the limits, the expense is to fall upon the owner of the property requiring the service of the Brigade. But there is also a provision novel in its bearing. By sec. 12 of the Act the officer in charge of the Brigade is empowered (*inter alia*) "to pull down any premises for the purpose of putting an end to a fire;" and by the same sec. it is enacted, "Any damage occasioned by the F. Brigade in the due execution of their duties shall be deemed to be damage by fire within the meaning of any pol. of ins. against fire." Here, then, an ins. office may become liable to pay to the extent of its ins. upon a house or houses, or other property, untouched by fire. No doubt it is for the common good; but heretofore the risk would have fallen upon the municipality or hundred in which the property is situated: as it must still do in the case of uninsured houses.

1872.—At the great fire which occurred at *Boston*, U. S., 9 Nov. this year, explosives were used rather freely, and with very good effect, in stopping the conflagration. Out of this circumstance arose the question of the liability of the ins. offices for the houses either wholly or partially destroyed. The Adjusters' Association at Boston took up the question with a view to its proper solution. There was a wide variance of opinion in the Association, some disclaiming any liability whatever, and others expressing their readiness to accept the fullest possible measure of responsibility. In consequence of this diversity, it was agreed to submit the points of disagreement to three gentlemen of acknowledged legal ability, and to abide by their decision. The following questions were propounded:

1. Are we liable if a building was blown up and the fire did not reach it?
2. Are we liable if the building was blown up and the progress of the fire was stopped thereby?
3. Are we liable if a building was blown up and the fire reached it, destroying all that remained of it and its contents, and then went beyond it?
4. Are we liable if a building and its contents were injured by the blowing up of an adjoining building, but with no other destruction than that caused by the explosion, no fire having ensued?
5. What are our legal obligations to the assured, either on building or contents? Shall we decline payment and act on the defensive, or shall we make payment and act on the offensive, and commence suits against the proper parties instrumental in causing the loss?
6. Would it be advisable to attach to our receipts for payment of losses a clause subrogating to us any rights the assured might possess?

The lawyers consulted were Hon. E. R. Hoar, of Massachusetts; Hon. F. Chamberlin, of Connecticut; and A. C. Blodgett, Esq., of Chicago.

Judge Hoar, in answer to the first three questions, expressed the opinion that the cos. whose pol. did not stipulate specially against liability for loss by explosion were clearly responsible under the circumstances named. The answer to the 4th question was that the hypothesis offered a fair subject for amicable litigation or compromise. To the 5th question the reply was, that the course to be taken was one of mere discretion, and either course might be pursued without making much difference in the result. And as to the last question, Judge Hoar thought it extremely proper to attach an assignment clause to the receipts mentioned.

Mr. Chamberlin's opinion was clearly in favour of contesting the point raised under every one of the questions, and, in answer to the 5th query, his remark was, "I should *defend*, as I am of opinion that that would be the shortest and most inexpensive mode of settling the question, and of course that is what all parties should desire."

Mr. Blodgett, who is not only a lawyer, but also an ins. adjuster of great experience (being connected with a leading Philadelphia company), presented an elaborate and yet lucid opinion upon the general subject, which concluded with these emphatic words: "If, then, these conclusions are correct, and the authorities upon the question seem decisive, the liability of insurers is easily determined from the contract, and in most cases is undoubted, and under the form of pol. in general use, not containing an express condition protecting the co. against loss by explosions, liability in such cases *cannot be successfully resisted, and ought not to be denied.*"

Upon this latter view we believe the offices mostly acted.

Several of the English towns have adopted the system of charging the proprietors of property or occupiers a specific charge or charges according to a specific scale for the use of F. engines, etc. It appears doubtful, in the light of several decisions to be presently noticed, whether such a system can be maintained. We here select one or two instances of towns in question:

In *Norwich* the following is the scale of charges for use of F. engines and brigade staff.

	In Norwich.			Beyond the limits of the Corporation.		
	£	s.	d.	£	s.	d.
Chief Constable	1	11	6	2	2	0
Inspector of Fire Brigade	1	1	0	1	11	6
Police Inspectors, each		7	6		10	6
,, Sergeants		5	0		7	6
,, Constables		2	6		3	6
Other Assistants, each for the first hour 1*s*., and 6*d*. for each hour afterwards, but not to exceed 2*s*. 6*d*. except under special circumstances						
Refreshments for men—the sum actually paid						
Turncocks, each		2	6			
Use of fire engine and hose reels	2	2	0	3	3	0
Damage to hose, engines, etc.—the sum actually paid						
Cleaning engines and hose	1	1	0	1	1	0
Cleaning hose reels		10	6		10	6
Horse hire and drivers—the sum paid						

The town of *Darlington* has a paid F. brigade. It adopts the system of charging for attending at fires according to the following scale:

	For the first three hours or portion thereof.		For every hour or portion thereof after.	
	s.	d.	s.	d.
Acting Superintendent	10	6	1	6
Foremen	7	0	1	2
Firemen	5	0	1	0

Between the hours of 9 o'clock at night and 6 o'clock in the morning they are paid one-half more. In case of alarm of fire, but it not being necessary to work the engine, they receive half the above rates for turning out. Assistants and pumpers are paid 2*s*. for the first hour, and 6*d*. per hour after. One-half more of these is paid between 9 at night and 6 in the morning. The following charges are made, in case of fire, for the use of each engine, or for the hose and apparatus:

	If within the District of the Board.	If out of the District of the Board.
If no insurance	Free.	Not less than £2 2*s*.
If insured by an office contributing £2 2*s*. p. a. to the maintenance of the Brigade	Free.	,, ,, £1 1*s*.
If insured by an office contributing £1 1*s*. p. a. to the maintenance of the Brigade	Not less than £2 2*s*.	,, ,, £3 3*s*.
If insured by an office not contributing to the maintenance of the Brigade	,, ,, £3 3*s*.	,, ,, £5 5*s*.

In cases of ins. in more than one office the above rates apply to each office. Within the district of the Board no charge is made for the engines or apparatus in case of an alarm of fire, if found unnecessary to work them. Out of the district one-fourth is charged. In all cases special damage to engines or apparatus, brigade uniform and clothing, and also horse hire, travelling expenses, refreshments, and incidental expenses incurred, are charged. Every member has a board with the word "Fireman" on it placed conspicuously on his dwelling.

The town of *Richmond*, in Yorkshire, adopts a similar scale.

1873.—In the case of the *Drighlington Board of Health* v. *Brewer*, before the Court of Exchequer this year, the defendant was summoned for £12 for the use of the F. engine, but the summons was dismissed. The Local Board appealed against the decision. Lord Chief Baron Kelly said a verdict must be given for the defendant Brewer. He was of opinion that the Local Board could not charge for the use of the F. engine, hose, apparatus, etc., for extinguishing a fire which broke out in a house or mill within the district to which the Local Board extended. By the several Acts of Parl. the Board was entitled to make rates for certain purposes, amongst others for providing engines for extinguishing fires. A rate for that purpose was imposed on all the inhabitants, but there was no mention that, in case of a fire at the place of a ratepayer, a charge could be made for the use of the fire engine. If the Legislature intended that they should be entitled to make any charge for services so rendered to any of the inhabitants who had contributed to the rates, they would expect to find an express provision to that effect, but no such provision was made. Therefore the Board of Health had no right to make any charge for the use of the engine. The other Judges agreed, Mr. Baron Pollock remarking that he agreed that the action was not maintainable. It was admitted that there was no express contract, and for them to say that there was an implied one would be contrary to the provisions of the Act and to principle.

This case, we believe, is not reported; but a shorthand note of it was taken, and was used in the case named under date 1875. Drighlington is a district near Bradford, in Yorkshire.

1875.—In the case of *Lewis* v. *Arnold*, before the Queen's Bench, the defendant, a farmer in the parish of Tunbridge, sent for the F. engine and apparatus belonging to Tunbridge Wells, to aid in extinguishing a fire in a haystack, of which the defendant was the owner. The expenses were £12 7*s*.; and under the Act of 1847 (above recited) the expenses are to be paid by the owner of the land and buildings. The defendant was not the owner of the land, and there were no buildings:—*Held*, that the occupier was the owner of the land, within the meaning of the sec. of the Act, and was liable for the expenses. (L. R. 10, p. 245.)

In the later case of the Corp. of *Barnsley* v. *Ibberson*, before the Justices of Barnsley in June this year, the defendant was sued for £4 10*s*. for the use of F. engine, hose, etc., belonging to the town, at a fire which took place on his premises in the preceding Feb. The defendant was ins. in the *Royal*, and that office became the real defendants. It was admitted that the firemen with the hose, etc., attended the fire; but it was contended on the part of the defendant that no charge can be made on a ratepayer who had contributed to the purchase of the engine, etc. The shorthand notes in *Drighlington Board of Health* v. *Brewer*, 1873, were read, and the Bench determined that the Corp. had no right to make the charge.

Where the expense of F. extinguishment is thrown upon the owner, as under the Acts of 1847 and 1865, and the pol. indemnifies the owner against all expenses incurred, as well as the damage, up to the limit of the sum ins., a burden is thrown upon the office in the shape of "consequential damages," which are usually regarded as outside ins. contracts. [CONSEQUENTIAL DAMAGES, *Fire*.]

The practice of *France* and *Germany* in regard to the expenses of extinguishing fires follows that of Gt. Brit.

In the U. S. the underwriter does not take upon himself this risk: the expense, where there is any—which is very rarely the case in consequence of the general application of the means of F. protection—falls upon the insured.

FIRE FENCE.—In Architecture, that portion of the party-wall extending above the roof, between adjoining buildings.

FIRE, FRIGHT OCCASIONED BY.—One of the most distressing, because rarely remedial, forms of chronic mania, says the London *Lancet*, is that produced by the mental shock of fire. The patient wears a peculiar aspect, in which suspicion is one element, and a settled look of panic another. Photographs of such inmates of asylums are remarkably uniform in their representation of this expression. The great fire at Chicago has produced a large number of lunatics, no fewer than 250 sufferers from it having been adjudged insane by the Court of Illinois. Considering the privations, however, to which the houseless victims of that conflagration were in many cases exposed, other causes than fire panic may be credited with a share of the result.—*Baltimore Underwriter*, 19 March, 1874.

FIRE GUARANTEE.—See RE-INSURANCE (FIRE).

FIRE GUARANTEE ASSO. LIM.—Founded 1875, with an authorized cap. of £100,000, in 2000 shares of £50. The objects of the Co. are: "1. The re-assurance in consideration of prems. to be charged in respect thereof to other ins. sos. of fire risks, incurred by the latter to persons who have effected assurances with such sos. 2. Co-assurance, being the assurance jointly with other assu. cos. (but not otherwise), of fire risks whereby the Co. shall take upon itself a definite proportion only of the entire amount of risk on each pol. of co.-assurance."

The promoter of the Co. is Mr. Theodore Conway von Waterford.

FIRE HEAT IN PROCESS OF MANUFACTURE.—Mr. Bunyon, reviewing the conditions of fire ins., remarks, "Another condition is that the office will not be responsible for any loss on goods or utensils damaged or destroyed whilst undergoing any process in which the application of fire heat is necessary. This is very reasonable: for the object of ins. is not to make up to a manufacturer a loss occurring from his want of care or skill in his art. Were it otherwise, an over-baked batch of bread, such as that in the Museum at Naples, forgotten by the baker when Pompeii was destroyed; or china spoilt in the furnace, would be the subject of a claim." Goods in process of manufacture when the building is burnt will of course be included in the claim.—*Law of F. Ins.*, 1867.

FIRE Helmet.—See Firemen's Respirators.

FIRE Indicators.—See Fire Detectors and Indicators.

FIRE Inquests.—The expediency of an inquiry into the cause of fires is generally admitted as an abstract proposition. When we come to reduce it into practice, there appear to be some minor difficulties. Even the most experienced are not all agreed as to whether the inquiry should be in *all cases*—which would render the proceeding less invidious—or only in cases of suspicion. The more practical incline to the latter view. Whether the coroner should hold an inquisition—as there is a lingering tradition that it was his former province to do, and as he still does in all cases where lives are sacrificed—or whether the police magistrate is the better official—or, finally, whether it would not be desirable to create a special officer—a Fire Marshal,—are all suitable points for discussion; but that nothing at all should be done is a crying evil, and a disgrace to our position as a business people. We present to our readers all the available information on the subject, and commend it to their earnest attention. Whatever interest the general public may have in the question as affecting life, property, and good government, the interest of ins. offices is affected in a compound degree.

In the Stat. of Marlborough—52 Henry III. c. 24—passed in 1276, we find the following:

> The Justices in Eyre from henceforth shall not amerce Townships in their circuits, because all being 12 years come not afore the Sheriffs and Coroners to make Inquiry of Robberies, *Burnings of Houses*, or other Things pertaining to the Crown, by whom such Enquests may be made full: Except Enquests for the Death of man, whereat being Twelve years of age ought to appear, unless they have reasonable cause of absence.

This Act was only repealed as recently as 1863, by 27 Vict. c. 125. But Lord Coke, in 2 *Inst.* 147, says, by way of interpretation: "That when any robbery, burning of houses, homicide, or other felony was done, the sheriff for so much as pertained to him, or the coroner, in the case of the dead man, would summon many townships, and sometimes a whole hundred, where 12 would serve to make inquiry." (See 1859.)

1327.—The curious book *Mirror of Justices*, supposed to belong to the reign of Edward II., which terminated at this date, speaks of coroners, and says, "Also they used to *inquire of burnings*, and who put to the fire, and how, and whether it were by felony or mischance." This is from Hughes's translation of ed. of 1642. It is usually held that the authority as well as the date of this work is too uncertain to allow it to rank as an authority against *Bracton*, *Coke*, and others, who mention no such powers.

1810.—May 3rd. The petition of Samuel Nesbitt was this day presented to the Right Hon. Lord Mayor, Aldermen, and Commons of the City of Lond. in Common Council assembled. The petition showeth: The petitioner remarks with feelings of great pain on the great prevalence of fires. He is informed that in many cities where population is proportionately larger for the space, fires are comparatively unknown, and thinks that every fire occurring in Lond. should be minutely investigated. He proposes to apply to Legis. to appoint a Fire Coroner for this city, giving him same power to call a jury that the county coroner possesses for inquiring into sudden deaths. That the said Fire Coroner should within 24 hours after notice from the ward beadle, etc., as the case may be, proceed to the spot where the fire happens, and summon a jury of 12 housekeepers in the neighbourhood, and they being sworn to give a true verdict. The coroner to certify such verdict to the magistrate of the district, to the party insured, and to the office interested. Proposes that Bill to be obtained from Parl. should originate with Corp. of Lond., and be introduced by one of their representatives. He trusts he shall not be thought to have occupied the time of the Court unnecessarily. And ever prays.—S. Nisbett.

The subject was referred to the General Purposes Committee to investigate and report.

On the 6th June the Committee delivered a rep. of Nesbitt's petition as follows: "We whose names are hereunto subscribed, having taken Mr. Nesbitt's petition into consideration, are of opinion that it would not be advisable for this Hon. Court to interfere therein at all." Signed by 10 members.

1825.—During this year, "when scarcely a night passed without a fire breaking out in a carpenter's workshop, or some other manufactory, in Glasgow," the authorities, prob. at the instance of the ins. offices, prevailed upon the Sheriff of Lanarkshire to intimate his intention of investigating every case of fire which occurred in his district. He accordingly addressed a circular to each of the ins. agencies, containing the following passages:

> The unprecedented frequency of fires in this city has become matter of serious and well-founded alarm. It is unnecessary for me to enlarge on the deep importance of the subject, which involves to such an extent the lives and property of the community; nor can I doubt that it is the anxious desire of every one to give what aid they can in probing to the bottom the true cause of the increase of so great an evil. I am rather disposed to think that the great competition among ins. offices not only facilitates the effecting of ins. among all ranks and characters, but moreover renders invidious a minute investigation of each particular case. I therefore feel most anxious, with a view to the public safety and interest, to give all the assistance in my power in the expiscating of the cause of the evil, which has lately increased in such a ratio as to afford suspicion that some of the cases may not stand altogether free of reckless carelessness or criminal design.
>
> What I would therefore propose is, *that for the future every case of fire without exception should be thoroughly investigated before me, or any competent authority through the medium of the Procurator-Fiscal, in order that the true cause of the calamity should be brought to light*. Thus, if unavoidable accident be estab. as the cause of the evil, the parties will stand blameless in the estima-

tion of the community; if culpable negligence attaches, if will then be for the insurers to consider whether the insured ought to recover; and if design be traced, it will lead to the detection and punishment of the crime: so that in every view, as such an investigation will give rise to greater caution, it will afford to the public, and certainly to the insurers, an add. safeguard against an evil of the greatest magnitude; and I am confident the public will give countenance to any proper plan, where unnecessary expense is avoided, which has for its object what I have explained.

I am, therefore, wishful immediately to meet with the agents of the different ins. cos. in this city, or a committee of them, for the purpose of concerting measures for carrying into effect what I have taken the liberty to suggest, and I will be ready to meet with the gentlemen here [on a day to be named].

The immediate consequence of this step was to put a stop to the frequency of fires in this city; and the beneficial effects being so apparent, Mr. Mackenzie, the then Man. of the *Scottish Union* Ins. Co., opened a correspondence with the Sheriff of Edin. and with the Lord Advocate, in the hope of securing like steps in that and other counties of Scot. The Lord Advocate replied, that while he should be well pleased that the magistrates of burghs should estab. a rule by which an investigation would take place in every case where a fire occurs, he would not give his sanction to that course being adopted by sheriffs; and that the expense of such investigations would be allowed in Exchequer, *only in those instances where there were good grounds for supposing that the crime of wilful fire arising could be brought home;* and his Lordship concluded by remarking that the resolution of the Sheriff of Lanarkshire had been too hastily adopted, especially if he contemplated that any part of the expense of such investigations was to be defrayed by the ins. cos. The good work so inaugurated was thus speedily frustrated by the chief law officer of Scotland. (See 1858-9.)

1845.—The Commissioners for inquiring into the state of large towns and populous districts, in their second rep. published this year, say it appears to them that the causes of fires are not sufficiently investigated in places where accidents from fire frequently occur, and that "*much valuable information would be acquired and generally diffused were the causes of all fires thoroughly investigated.*" It may therefore, they add, "be worthy of consideration whether such a duty should not be imposed on some existing authority." [FIRE EXTINGUISHMENT.]

1856.—Mr. Braidwood, in a paper read before the So. of Arts on Fires, said: "One of the greatest preventives of carelessness in the use of fires and lights would be a legal inquiry in every case, as it would not only show the faults that had been committed, and thus warn others, but the idea of being exposed in the newspapers would be another motive for increased care."

1857.—The State of *New York* passed a law for the investigation of the causes of fire by the coroner, at the request in writing of the president, sec., or agent of any ins. co., or by two reputable freeholders. An outline of this law has already been given under CORONERS. (See 1868.)

1858.—About this date the coroners in London, Lincoln, Doncaster, and some other places, commenced to hold systematic inquiries into the causes of fires. It was stated in evidence before the Parl. Committee of 1862 that the beneficial effect was immediately apparent; but the strong arm of the law was soon invoked to declare such a proceeding illegal. What was to become of incendiaries if honest people began to inquire into the causes of fires!

About this date also, fires were very frequent in the town of Swansea, and they usually occurred from Saturday till Monday. The then Mayor, Mr. W. H. Michael, put himself in communication with the chief of the police on the subject. It was resolved that evidence should be obtained as far as possible of the cause of fire in each case. This step was taken; and it was given in evidence by Mr. Daniel, Fire Adjuster, Bristol, that the fires became speedily reduced, "so that two or three years elapsed without their having ten cases."

1859.—In the case of *Reg.* v. *Herford*, Coroner for Manchester, before the Queen's Bench this year, it was sought to prohibit the said coroner from further holding an inquisition respecting the origin of a fire at the shop of Levy Kreigsfeld, in the City of Manchester. The early authorities we have quoted and some others were cited; and finally it was *held*, that a coroner has no power to hold an inquisition respecting the origin of a fire—except in cases where loss of life had ensued.

1862.—A Select Parl. Committee was appointed to inqnire into the existing state of legislation, and of any existing arrangements for the protection of life and property against fires in the metropolis. The composition of this Committee, the witnesses called before it, and the recommendations of the Committee itself, will be reviewed in detail under FIRE PROTECTION. We here propose briefly to notice the evidence of one or two of the witnesses on the point before us. In our art. CORONERS we have already given the evidence of Mr. John Humphreys, one of the Coroners for Middlesex, and also that of Mr. D. W. Harvey, Commissioner of the City Police, upon the subject. Mr. F. Hodges, owner of the then Lambeth F. Brigade, was asked: "(3521) Do you think it desirable that there should be an inquiry under a proper officer after every fire?—Certainly; very desirable indeed. (3522) By the coroner, or some other competent officer?—By a competent officer appointed for that purpose. (3523) You think that that would be a great improvement upon the present system?—A very great improvement, and that it would prevent a very great deal of incendiarism." Mr. W. Newmarch, F.R.S., then Sec. of the *Globe*, was examined: "(4078) Referring to another branch of the inquiry, do you not think that it is a desirable thing, and that it would tend to prevent fires, that an inquiry should take place whenever a fire happened?—Such an inquiry would be very desirable. (4079) Do you not think that it is desirable that the same plan should be adopted as is adopted in the case of the loss of a ship, where the captain furnishes some statements, and an inquiry generally takes place by the office in which the vessel is insured, as to the facts of the loss of the ship: do you not think that the same principle would be good if applied to fires? Yes; there is no doubt that many fires occur, in the origin of which the public have a considerable interest, and the circumstances of the origin of the fire can only be ascertained by an inquiry under a public functionary. The offices always endeavour to ascertain the origin of fires as far as they can, but the offices are not public prosecutors, and it would be entirely futile if they were to attempt to undertake the duties of public prosecutors. . . . (4140) You have recommended, I believe, an inquiry into the origin of fires?—Such an inquiry would be very desirable in many cases. (4141) At whose expense?—At the expense of the municipality or county. (4142) What interest would they have in fires?—The interest which all well-regulated communities have in preventing fraud and violence."

1865.—Mr. Edwin Chadwick, in his address on Economy and Trade before the Social Science Congress this year, gave an account of the results of his inquiries, some years previously, into the causes and circumstances of fires [FIRES, CAUSES OF], and he recommended by way of remedy that every loss of a house or conflagration should be treated as *primâ facie* "a default occasioning the loss of property, or the loss of life, or endangering it, and endangering the public safety, and should be the subject of a competent and independent judicial examination."

1866.—The Lord Advocate (Patton) directed the Procurator-Fiscals of Counties to institute inquiries into all fires, subject to the following regulations:—1. Whenever a fire shall have occurred, and circumstances of suspicion as to its origin shall come to the knowledge of the Procurator-Fiscal, or where he has reason to believe that such suspicion is prevalent, he shall institute and follow out an investigation into the origin of the fire, whether an information shall or shall not have been lodged with him containing a charge of wilful fire-raising.

2. In cases of extensive destruction of property, or where life has been endangered, the Procurator-Fiscal shall, without a formal fire inquisition, satisfy himself as to the absence of any ground for suspicion.

3. When death has resulted from a fire, the Procurator-Fiscal shall act as directed under the regulations as to sudden death.

It has been objected that these inquiries are held in private.

1867.—The Select Parl. Committee on F. Protection which sat this year said in its Rep:

> Your Committee have had a great deal of evidence as to investigation into the causes of fires in this and other countries. In this country it was generally thought up to 1860 [1859], that the coroner had the power of investigating into the origin of the causes of fires, and several coroners did exercise that power. In that year, however, the Court of Queen's Bench decided that the coroners had no such power, and the practice of holding such investigations was discontinued. . . . According to the evidence, it is the general practice on the Continent, in Australia, and in America, to inquire into the origin of all fires, *and the effect of such investigations is to reduce their number.* In most instances the settlement of the claims on ins. cos. is deferred till the termination of the inquiry.

In the "Recommendations" forming part of the Rep. occur the following passages:

> Your Committee, *in recommending that an inquiry should take place into every fire*, would direct attention to three stages into which, in so far as respects Eng., the inquiry should be divided: 1st, the initiatory stage, to be made by the police or F. Brigade, who must be instructed and charged to do it; and if anything the least suspicious is observed about the fire, it will be their duty to report it to an officer authorized to make inquiry; and, this officer shall conduct the second stage of the inquiry by examining witnesses on oath, and, if he think proper, empanelling a jury so as to discover whether the fire is suspicious or not, and if suspicious, on whom the suspicion can be fixed; if the evidence is not strong enough to implicate any one in particular, the inquiry will terminate; but if there are strong grounds for suspecting any one, he will be prosecuted before the ordinary criminal courts, to be dealt with in the same way as any person accused of crime: this will constitute the 3rd stage of the inquiry. The question to consider then, is, who shall be the officer to whom the police shall report the case for the second stage of the inquiry. Several suggestions have been made to your Committee by the witnesses: some suggest the coroner, others the police magistrate, and a third, the appointment of an officer similar to the fire marshals in America.
>
> Your Committee, after giving due consideration to this subject, would prefer the police magistrate, or coroner, to the fire marshal, mainly because in the courts of these two officers they have a ready-made machinery, and they, such being the case, are averse to the recommendation of the creation of any new offices; and they would recommend the coroner to carry out the second stage of the inquiry in preference to the police magistrate, because the coroner's court is a movable one, and he can constitute his court and conduct the inquiry in the immediate vicinity of the fire; and because, till of late, he was generally considered to have power of inquiry into fires, and such power was exercised by some coroners.
>
> Your Committee would recommend that he should be paid for conducting the inquiry partly by fees and partly by salary out of the rates. They do not think that the ins. cos. should be called upon to pay any part of the expense, as it is not the duty of any private commercial co. to prosecute for a public crime: and besides, the fire may take place on property not insured.
>
> Your Committee are of opinion that in *Ireland* the inquiry might be conducted before the stipendiary magistrate of the district in which the fire occurs.
>
> They would further recommend that, as regards *Scotland*, the police should be directed to report

every fire to the Procurator-Fiscal, who would then make the preliminary inquiry, and report thereon according to the existing system in the cases of suspected crime, and of such fires as, from suspicious circumstances, are at present inquired into. If the circumstances are considered by the Crown counsel to be at all suspicious, an inquiry should then be directed to be made by the Sheriff in open court. The result of this inquiry should be again reported to the Crown counsel, who would determine whether criminal proceedings should follow. Any add. expense occasioned by this inquiry may be defrayed by the Treasury, as is done in the ordinary criminal expenses of the country; or it may be defrayed from the county or burgh rates.

And they would specially recommend that no claim should be settled by any ins. co. without a certificate from the police or F. Brigade, or officer appointed to conduct the investigation into the origin of the fire; but this certificate should not debar the ins. offices from opposing the claim if they think proper.

As eight years have now elapsed since that Rep. was made, and nothing effective has been done, we will place on record, in the hope of influencing a final result, the opinions of the more important of the witnesses examined on this point, and the indications they expressed regarding the proper officer: on which latter point there was a good deal of difference of opinion; on the former practically none. We take the witnesses in the order they were called.

Mr. C. F. T. Young, Civil Engineer. "(Question 262) You think that such a course of proceeding would conduce to diminish the number of fires, and to the safety of the public?—Undoubtedly." "(279) The coroner is the person who is most accustomed to examinations of this description."

Mr. G. A. Young, Surveyor to *Imperial* Fire. "(350) Do you think that the institution of a judicial investigation after fires would have the effect of reducing the number of fires?—I do." "(351) For what reason?—It would have a moral effect against the crime of arson."

Mr. F. G. Smith, Lond. Sec. of *Scottish Union.* "(650) If we had a judicial investigation into every fire, you would find those incendiary fires very much diminished indeed." "(557) It should be the duty of the coroner to hold an inquest in case of fire."

Mr. C. J. Bunyon, *Norwich Union.* "(1042) Then you would say that an investigation should take place into every fire?—Certainly not; only whenever crime could be imputed or supposed." "(1031) I should be averse to giving the coroner a new jurisdiction; I imagine that a vast expense would be entailed by so doing, and the repression of crime would not be benefited." "(1136) The evidence before coroners' inquests is of the loosest description."

Mr. S. J. Fletcher, Sec. of *Sun* Fire. "(1314) What plan could you suggest for rendering the detection of incendiarism comparatively certain?—An immediate public inquiry under authority." "(1348) Who in your opinion should initiate the inquiry?—Anybody but the ins. office. A public officer." "(1360) I should imagine that the coroner would be the proper officer, unless an officer similar to that which exists in Scotland was appointed; I mean the Procurator-Fiscal."

Mr. David Smith, Man. *North British and Mercantile.* "(1692) Do you think that there should be a public investigation?—Yes." "(1693) I think there should be an inquiry before the police in every case." "(1640) If the County Court Judge had criminal jurisdiction as well as civil jurisdiction, I confess that I think he would be a better party for conducting the inquiry than the coroner." "(1712) It had been unanimously agreed by the entire body of the Man. of Scotch F. Offices that there ought to be an inquiry into the origin of fires."

Mr. Swanton, Supt. of the Lond. Salvage Corps. "(1816) I think that an investigation would put a stop to a great many." "(1817) An investigation by whom?—By the police, because they have the least interest in any result of the investigation."

Mr. P. M. Dove, Gen. Man. *Royal.* "(2480) Do you think, if we had a judicial investigation into the cause of fires, it would be the means of discovering not only the crime of incendiarism, but other crimes which incendiarism conceals?—It would be most valuable in many respects, because it would discover cases of spontaneous combustion, and evidence would be given by chemists with regard to the affinities of different articles." "(2492) My own impression is very strong in favour of the coroner, in consequence of his court being a movable body, and if you have any law at all it should be one which could be applied to every little town, however remote." "(2521) On the other hand, sometimes when a jury is empanelled, they are all friends of the accused, and then it becomes entirely nugatory."

Mr. Swinton Boult, Sec. *Liverpool and London.* "(3359) Is there anything which you could suggest for putting a stop to that enormous increase of fires that you have told us of?—There would be nothing so effectual as an inquiry into the origin of fires." "(3361) I think that the best arrangement is that which exists in some of the cities in America, namely, the appointment of a fire marshal, whose duty it should be to be on the spot when a fire takes place, and immediately to enter on the necessary investigation."

Mr. F. A. Clint, Chairman of Watch and Fire Committee, Liverpool. "(3708) I feel that there should be some power of inquiry into the causes of fire." "(3713) Then do you think that it would be advisable to give the coroner that power?—Him or some other officer; but he seems ready made for the purpose." "(3718) We should have to take care that he did not make vexatious inquiries for the purpose of obtaining his fees. . . . I have always thought that they are open to suspicion, and that they may abuse their powers."

Mr. John Humphreys, Coroner for Middlesex. "(3963) Do you think it would be beneficial to have a regular examination into all fires?—It would be the means of preventing wilful fire-raising to a very large extent."

Mr. Serjeant Payne, Coroner for City of Lond. "(4015) You think that those inquests had the effect of reducing the number of fires?—I have no doubt about it." "(4057) I may, however, add that the office of coroner, in my opinion, ought to be filled by first-class men. I do not know how it is in the country; but with proper men in office, I do not see any difficulty or any necessity for improvement."

Mr. Vance, Fire Inspector, Northern District of Ireland. "(4416) I would have a private inquiry into the cause of every fire." "(4424) I prefer the stipendiary magistrate."

Mr. Doyle, Adjuster of Fire Losses, Dublin. "(4577) I think there should be an inquiry into all fires." "(4586) Do you think the coroner would be the fittest person to do that?—Either the coroner, a professional architect, or a lawyer."

Mr. Edward Newman Knocker, Clerk to the Magistrates, Sevenoaks. "(4789) Would you propose that that should be done in the case of every fire?—I think so; it would otherwise be invidious." "(4785) Would you entrust that power to the coroner?—Certainly not to the coroner of a county, because I do not think as at present constituted he is a good officer. He is a mere medical man in some cases, and in others a clerk to a solicitor; but it requires a person accustomed to deal with evidence to occupy that post."

Captain Shaw, Chief of Metropolitan Fire Brigade. "(6110) You would have some kind of investigation into every fire?—Yes, into every fire, however small." "(6125) The magistrates have greater experience, and in that way they would be the better persons no doubt; but there is the great advantage of the coroner's court being a movable court." He thought the fear of an inquiry might in some cases cause a delay in giving the alarm, which would be bad; but on the whole the advantages of inquiry preponderated (6126-28).

Sir Thomas Henry, Police Magistrate, thought (3873) an inquiry into the cause of every fire, whether there was suspicion or not, would hardly be tolerated. "(3876) If you ask me whether I think that jurisdiction ought to be given to the coroners, I must say I think it ought not."

Mr. Swinton Boult placed in evidence some returns which were pub. in Appendix No. 7 to the Rep. 2. Table showing the *increase* in the number of fires recorded as of "suspicious, doubtful, and unaccounted for" origin:

In the year 1852 there were 923 fires, of which 318, or 34½ p.c., were of that class.
,, 1853 ,, 900 ,, 324 ,, 36 ,, ,,
,, 1862 ,, 1303 ,, 507 ,, 38 ,, ,,
,, 1863 ,, 1401 ,, 501 ,, 36 ,, ,,
,, 1865 ,, 1502 ,, 618 ,, 40⅓ ,, ,,
,, 1866 ,, 1338 ,, 700 ,, 52⅓ ,, ,,

Another return, which showed that in the cities of Hamburg, Copenhagen, Gothenburg, St. Petersburg, Berlin, Paris, and Havre, there was invariably an inquiry into the cause of every fire; that this inquiry in every case except Paris (where the ins. offices themselves first moved) was originated by the police, and conducted before the chief of that body; that where there were grounds of suspicion, the accused parties were handed over to the prosecuting authorities; and that losses to suspected persons were not paid until the inquiry was concluded.

In *Massachusetts* the law of 1867 contains the following provisions:

> 1. When property is destroyed by fire, and a complaint within thirty days thereafter is subscribed and sworn to by any person before any police court, or any municipal court, or any trial justice, alleging that reasonable grounds exist for believing that the fire was caused by design, and a majority of the mayor and aldermen, or select men of the city or town respectively in which said property is situated, certify in writing, that in their opinion the same is a proper case for investigation, such court or justice shall forthwith issue a warrant to a constable of the place where the property was destroyed, requiring him forthwith to summon six good and lawful men of the county to appear before the court or justice at a time and place expressed in the warrant, *to inquire when and by what* means the fire originated.

The verdict to be filed within one week by the magistrate with the Clerk of the Courts for the county, or with the Clerk of the Municipal Court.

1868.—In the State of *New York* a law of this year requires the appointment for the Metropolitan Police District of a "Metropolitan Fire Marshal," and then proceeds:

> 2. It shall be the duty of the Metropolitan F. Marshal to examine into the cause, circumstances and origin of fires (occurring in those portions of the Metropolitan Police District in which regular patrolmen of Metropolitan Police are appointed), by which any building, vessels, vehicles, or any valuable personal property, shall be accidentally or unlawfully burned, destroyed, lost or damaged, wholly or partially; *and especially inquire and examine whether the fire was the result of carelessness or the act of an incendiary.* The Metropolitan F. Marshal shall take the testimony on oath of all persons supposed to be cognizant of any facts, or to have means of knowledge in relation to the matters required to be examined and inquired into, and cause the same to be reduced to writing, verified, and transmitted to the Board of Metropolitan Police, with his Rep. in writing, embodying his opinions and conclusions in relation to the matter investigated.

He has also to report in writing to the Metropolitan Fire Depart., the Board of Metropolitan Police, the Unsafe Building Commission, to the District Attorney, to the N.Y.

Board of Underwriters, to the owners of property or other persons interested in the subject-matter of investigation, stating any facts or circumstances which he may have ascertained, which shall in his opinion demand the attention of any of these bodies or persons; and it is further his duty, whenever he shall be of opinion that there is evidence sufficient to charge any person with the crime of arson, to cause such person to be arrested and charged with such offence, and furnish to the district attorney all the evidence of guilt, with the names of witnesses, and all information obtained by him, including a copy of all pertinent and material testimony taken in the case; and he shall specially report his various proceedings to the Board of Metropolitan Police.

It thus appears (having reference to the law of 1857, as well as the above) that in towns the Fire Marshal becomes the moving official; in country districts the coroner.

1873.—There was a Bill before Parl. introduced by Mr. McLagan in view of enabling coroners to hold inquiries respecting fires happening in their several districts. This was an important and well-considered measure, and ought to have received the ready sanction of the House; but its promoter could make no real progress with it. We have given a full outline of its provisions under our art. CORONERS. By what sinister influences the passing of this useful measure has been delayed it is not easy to conceive.

An excellent letter which appeared in the Lond. *Times*, 3rd Nov., signed "A Fire Office Manager," contained the following passages:

> Among the many inconveniences and shortcomings in our Metropolitan Government which call for the abolition of the effete and extravagant Vestry system, there is hardly one which is so striking as the immunity of those who either carelessly or wilfully damage their neighbours, and endanger Lond. by setting fire to houses and their contents. The past month of October happens to have presented several of such cases, loudly calling for searching judicial inquiry, but all of which are likely to escape any such investigation.
>
> The Police of the Metropolis, the Board of Works, the Lond. F. Brigade, the Lond. Salvage Corps, the F. Insurance Offices, the Magistrates, the Vestries, acknowledging no supreme authority, declining to join in any concerted action, and unauthorized to employ their pecuniary funds for any such purpose, are yet agreed as to the danger in which the metropolis is placed by the recklessness of some of its inhabitants, and the criminal attempts of others.
>
> The F. insurance offices, as their name implies, are only commercial bodies, who, although they occasionally strain the just limits of their duty in investigating suspicious cases, and even in prosecuting criminals for fire-raising, and to whose exertions the prosecution and conviction of the notorious fire-raiser Anthony is mainly due, are not in any point of view the proper authority to whom the inhabitants of Lond. ought to commit their safety in life, limb, or property. Their interest, limited to the amount of property insured by them as a mere commercial speculation, and their want of connexion with the administrative and executive authorities of the metropolis, would render them an unfit and unfair tribunal for such inquiries as the safety of Lond. demands.
>
> Even in cases where fraud has been undoubtedly perpetrated, the shareholders in F. insurance companies are naturally unwilling to sanction the use of their funds for the mere punishment of crime. The only course open is to refuse payment of the claim, and it is far more common, when adverse evidence is not clear, to pay the sum demanded, or to reinstate the damage sustained. In either case the public suffers by the escape or immunity of the criminal wrongdoer.
>
> Where death or serious accident has undoubtedly resulted from a fire, the public authorities usually initiate an inquiry; but even in such cases the division of our metropolis, the uncertainty of jurisdiction, and the entire want of official connexion between the various executive forces—fire brigade, salvage corps, police, and magistrates—are inconveniently manifest.

1874.—At the Social Science Congress held at Glasgow this year, Mr. Peter McLagan, M.P., who was Chairman of the Select Parl. Committee of 1867, read a paper, in which he presented an entire review of the question in the light of the evidence given before that Committee, and of the experience of the ins. offices. [CORONERS.] [FIRE MARSHALS.]

FIRE INSURANCE.—The subject of Fire Ins., taken as a whole, has not heretofore received careful and systematic investigation from any previous writer. It seems to have been usually regarded as of less consequence than either Life or Marine Ins.; and also as being surrounded with fewer elements of interest. We hope to cause some modification of this opinion. We believe we shall show, that alike in history, and in practice, it possesses the greatest possible attraction for students; while the lesson of the Fire Manager is never learned. Every new product introduced into our commerce and manufactures demands the consideration of Fire Underwriters, not only in regard to its own properties, but in relation frequently to the properties of other products and processes. We shall treat the subject alphabetically: hence the history of F. Ins. will come under FIRE INS., HIST. OF.

FIRE INS. ADJUSTERS.—To settle a loss accurately and with due regard to the rights of all the parties interested requires knowledge, intelligence, tact, industry, and honesty to a rare degree. The adjuster occupies the position of judge, jury, and even advocate, in a court of claims in which hardly two similar cases can be tried. He is placed, therefore, in contact with interests which are necessarily diversified, and in behalf of which he must employ good general judgment, a retentive memory, a firm will, united with a persuasive, conciliatory manner, and the ability to read character accurately, and reason from cause to effect rapidly.

The adjuster, in pursuance of his duties, is called upon to play many parts. He must decide upon the value of materials used in a thousand different trades, professions, branches of bus. He must interpret law, draw up depositions, examine witnesses—some of them unwilling often, and others bent upon deception—overhaul intricate accounts, and do not a little detective work. To do all this well, requires all the mental and physical qualities and acquirements we have named.—*Spectator*, N.Y., 1874. [Assessor of Fire Losses.]

FIRE Ins. Adjustments.—See Fire Ins. Losses, Adjustment of.

FIRE Ins. Agents, Considerations for.—From what has preceded, and what is to follow, in regard to the bus. of Fire Ins., it is seen that agents who are to be successful have much to learn, and much to keep well in mind. It is indeed with Fire Ins. as with most other matters: proficiency is the point to be aimed at. The most efficient agent will be the most valuable to his co., and to himself.

The *Ins. Agent*, March, 1873, offered the following "considerations" to Fire Agents: 1. One bad risk for which only a few shillings is perhaps paid may destroy the profits of a large and otherwise profitable agency. 2. It takes the produce of £500,000 of ordinary insurances to pay *one* loss of £500. 3. When a man in trade allows his stock to outgrow his fire ins., it is commonly the fault of his fire agent in not directing attention to it. The proposal might be had for asking. 4. Fire Ins. may always be had at the quarter days: so many then change hands, are then increased, and then commenced. 5. The argument that "another office will do it for less. prem." is not always sound or conclusive. Sometimes that other office does not know all the facts; and sometimes it is an unauthorized statement of an unscrupulous insurer who is not above telling a lie for the sake of a few shillings.

In our art. Agents, Duties and Responsibilities of, we have already given an outline of the legal aspect of an agent's position; see also other articles associated with title "Agent."

FIRE Ins., Application of Moneys from.—See Fire Ins. Losses, Adjustment of, under date 1774, where the provisions of 14 Geo. III. c. 78, s. 83, are set out.

FIRE Ins. Census.—The Committee of the National Board of Fire Underwriters, U. S., having charge of "Adjustments and Statistics," in its Rep. for 1873-4, state that it had caused to be prepared and sent to all the fire cos. represented at the National Board, a circular asking for monthly returns of all losses on special hazards; the primary object being to secure for the Bureau of Statistics a complete record of the losses on special risks throughout the country. They think this record may become ultimately of great value, "provided a state or national census be ever taken, which will yield sufficient detailed information of the manufacturing interests of this country to be of value to underwriters." The Rep. says hereon:

> If we have as a basis for a calculation the number of mills of a given class in a given state; the number of brick and frame buildings, value of buildings, value of machinery, and average valuation of stock on hand, we can arrive at the *value of insurable property in that class of risk*. This supplemented by the actual losses by fire on such class for a term of years, will afford data for a calculation of the actual hazard superior even to the aggregated experience of the cos.

On the practicability of such a department of the census being organized, a communication was opened with the Hon. Francis A. Walker, Sup. of the Census of 1870, and also with the Hon. Oliver Warner, Sec. of the Commonwealth of Massachusetts. Mr. Walker says, in reply:

> You inquire whether in my opinion the schedule for the enumeration of manufacturing industry, at least for those branches which are carried on in large estab., could be so modified at a future census of the U.S. as to secure a reliable return of the values of buildings and machinery employed in such manufactures, for the better determination of just and sufficient prems. for ins. against fire on this class of property. In reply I would say that I deem the add. to the inquiries of the census entirely practicable . . . . .

Mr. Walker promises to give the subject his consideration.

The matter is progressing in other quarters. A letter from Mr. Julius L. Clarke, Ins. Commissioner, Massachusetts, to Mr. Oakey, President of National Board of Fire Underwriters, N.Y., under date Dec. 14, 1874, contains the following:

> I improve a spare moment to say to you that the interrogatories which the National Board of F. Underwriters submitted through its Committee on Statistics, for insertion in the Massachusetts census blank for 1875, have been accepted, and I hope will elicit such information as will materially aid the Board in perfecting the important work which it is seeking to accomplish. *I cannot but feel that every step in this direction is an advance in behalf of public interest and prosperity, and that the elimination of a complete and reliable ins. experience will prove a crowning result in the labours of the Board which you represent, tending directly to promote as well as protect the commercial and industrial welfare of the country.* As an insurance official, I have laboured as best I could to advance this most desirable result, and whatever may be my future relations, I shall not cease to contribute what I can to secure the success of legitimate underwriting.

We shall probably soon hear something of the result. [Fire Ins., Classification of Risks.]

1874.—The N. Board Committee on Statistics has already commenced to compile such a T. as it desires to complete. The first requirement is the number of risks of any one class, and their aggregate value. The losses upon these over a series of years will determine the value of the risk. No class or subdivision is formed unless it is believed that there exist at least 150 such risks. It is impossible to speak too highly of the labours of this Committee. Its Ann. Reps. furnish practical instances of the value of the statistics obtained.

The following is the skeleton which is gradually becoming clothed with living facts :

Classification No.	*Class of Risk.*	No. of Estabs. in U.S.	Capital Employed.
A 1.	*Agricultural.*		
	Detached farm dwellings and contents.		
	Live stock.		
	Barns (including all farm outbuildings and contents.)		
	Dairies.		
	Cheese factories.	1313	4,000,000
	Hop houses.		
	Standing timber.		
	Cut timber.		
	Standing crops (including all crops cut and garnered in fields).		
a.	*Bleacheries, Dye and Print Works.*		
	Bleacheries and dye works.	250	5,000,000
	Print works.	42	13,000,000
b.	*Brass.*		
	Foundries.	275	5,000,000
	Workers miscellaneous.		
c.	*Bridges.*		
	Common.		
	R. R. Covered.		
	R. R. Deck.		
d.	*Broom, Brush, & Willow Ware Factories.*		
	Broom & whisk brush factories.	635	2,000,000
	Brush, not whisk, factories.	157	2,000,000
	Willow ware factories.	168	209,000
e.	*Cotton.*		
	Gins.		
	Presses.		
	Sheds or warehouses.		
	Mills, steam, 1st class.	969	141,000,000
	Mills, water ,,		
	Mills, steam other than 1 cl.		
	,, water ,, ,,		
f.	*Domestic.*		
	Boarding houses.		
	Dwellings and contents.		
	Hotels and taverns.		
	Stables, etc., public.		
	,, private (including barns).		
	Tenement houses.		
	Wooden rows and contents.		
g.	*Flax, Hemp, Jute, Bagging, etc.*		
	Bagging, flax, hemp, and Jute factories.	33	3,000,000
	Cordage and twine factories.	201	4,000,000
	Flax mills.	100	3,000,000
	Rope walks.		
	Sail making	179	584,000
h.	*Flour and Grain.*		
	Bakeries, family.		
	,, steam.		
	,, confectioneries.	949	5,000,000
	,, elevators.		
	,, flour and grist mills, steam, 1st class.	flour and grist mill products. 22,573	152,000,000
	,, flour and grist mills, water, 1st class.		
	,, flour and grist mills, steam, other than 1st class.		
	,, flour and grist mills, water, other than 1st class.		
i.	*Furniture and Cabinet Warerooms.*		
	Factories.	6000	44,000,000
	Upholsteries.	656	7,000,000
	Furniture and Cabinet stocks, wholesale.	See *Mercantile.*	
	Furniture and cabinet stocks, retail.		
j.	*India-rubber and Elastic Goods.*		
	Factories.	56	7,000,000
	Hosiery factories.	248	11,000,000
	Hoop skirt and corset factories.	194	2,000,000
k.	*Iron.*		
	Blacksmiths' shops.	23,364	16,000,000
	Foundries.	2746	72,000,000
	Rolling mills.	414	59,000,000
	Workers, miscellaneous.		
k.	*Iron.*—(continued)		
	Machine shops.		
	Nails, spikes, bolts, etc., wrought.	350	19,000,000
l.	*Leather.*		
	Boot and shoe factories.	23,428	49,000,000
	Glove and mitten ,,	221	2,500,000
	Currying and skeep skin tanneries.	3083	13,000,000
	Saddlery and harness factories.	7,607	14,000,000
	Saddlery and harness stores—See *Mercantile.*		
	Trunk frctories.	222	2,000,000
	Tanneries, oak bark, steam	4237	43,000,000
	,, cold liquor		
	,, hemlock, steam		
	,, ,, cold liqr.		
	Dry houses.		
	Bark piled (not exposed by tannery).		
m.	*Liquors—Distilled, Malt and Other.*		
	Breweries.	1972	49,000,000
	Malt houses.		
	Cider factories.	547	766,000
	Distilleries.	719	16,000,000
	Mineral and soda water factories.	387	3,500,000
	Rectifying.		
n.	*Mercantile.*		
	Agricultural implements, including seedsmen's stocks.		
	Apothecaries.		
	Book stores.		
	Boot and shoe stores.		
	Boot and shoe findings.	271	859,000
	Carpets, stocks of		
	Carriage repositories.		
	Country stores and stocks.		
	Drug stores, wholesale.		
	Dry goods and clothing, wholesale.		
	Dry goods and clothing, retail.		
	Flour, feed, and grain.		
	Furniture and cabinet stocks, wholesale.		
	Furniture and cabinet stocks, retail.		
	Groceries and provisions, wholesale.		
	Groceries and provisions, retail.		
	Hardware, Stocks of.		
	Hat and cap stores.		
	Iron stores.		
	Iron in pigs.	386	56,000,000
	Jewellers' stocks.		
	Junk stores.		
	Liquors, wholesale stores.		
	,, including saloons and restaurants.		
	Merchandize not hazardous.		
	,, hazardous.		
	,, extra hazardous.		
	,, specially hazardous.		
	Millinery and fancy articles.		
	Naval stores.		
	Paper, stocks of.		
	Saddlery and harness stores.		
	Saltpetre stored.		
	Sewing machine stocks.		
	Storage general.		
	Tobacco and cigar stocks, wholesale.	See *Tobacco.*	
	,, ,, retail.		
	Leaf tobacco, stocks of.		
	Transit risks.	See *Railroad.*	
	Trunk stores.		
	Variety stores.		
	Warehouses and contents, city.		
	,, ,, country.		
	Wharf and pier risks.		
	Wood and coal yards and sheds.		
	Wooden ware stocks.		

Classification No.	*Class of Risk.*	No. of Estabs. in U.S.	Capital Employed.
o.	*Metal Workers, other than Iron & Brass.*		
	Engraving.	157	2,000,000
	Engraving & stencil cutting.	136	250,000
	Jewelry manufactories.	681	12,000,000
	Locksmithing & bellhanging.	191	230,000
	Plumbing and gasfitting.	705	4,000,000
	Quartz mills including coal breakers.	296	11,000,000
	Tin, copper, and sheet iron works.	6646	21,000,000
	Watch and clock making.		
	Watch and clock repairing.	1103	1,500,000
	Wire workers.	141	2,000,000
p.	*Oil.*		
	Coal oil, crude.		
	Coal oil, refined.		
	Coal oil, refineries.	170	7,000,000
	Floor-cloth factories.	34	2,500,000
	Factories, not coal.	408	10,000,000
	Petroleum.		
	Fish oil.		
	Vegetable oil.		
	Mineral oil.		
q.	*Packing Houses.*		
	Pork, beef, etc.	253	22,000,000
	Canning and curing fruit, etc.		
r.	*Paper.*		
	Bookbinderies.	500	5,500,000
	Mills, steam, white paper, etc.	669	35,000,000
	„ water „ „		
	„ steam—straw, etc.		
	„ water „		
	Box and band-box factories.	234	1,000,000
	Printers and publishers.	2160	40,000,000
s.	*Public Buildings and Contents.*		
	Banks.		
	Churches.		
	Colleges and schools.		
	Hospitals, poor houses, asylums, etc.		
	Prisons, jails, etc.		
	Public halls (without scenery).		
	City and county.		
	Masonic lodges, regalia, etc.		
	Theatres, etc. (including public halls, with scenery).		
t.	*Railroad Risks.*		
	General form.		
	Specific form.		
	Spark risks.		
	Common carrier form.		
	Inland transit risks.—See *Mercantile*.		
u.	*Tobacco and Cigar Factories.*		
	Tobacco factories, steam.		
	„ „ hand.	5,100	23,000,000
	„ stemmeries.		
	Cigar factories, steam.		
	„ „ hand.		
	Tobacco and cigar stocks, wholesale.		
	Tobacco and cigar stocks, retail.		
	Leaf tobacco, stocks of.		
v.	*Vessels, etc.*		
	Shipbuilding and repairing.	762	9,000,000
	Ships and cargoes in port.		
	Steamships and steamboats, ocean going.		
	Steamboats coastwise and inland.		
	Ferry-boats.		
	Tug-boats.		
	Freight-boats (inland, carrying freights exclusively).		
	Canal-boats.		
w.	*Wood.*		
	Box making.	815	4,000,000
	Builders' risks.	Carpentering and building. 17,142	25,000,000
	Cabinet shops, hand work.		
	„ „ steam work.		
	Carpenters' shops.		
	Cooperage.	4961	10,000,000
	Hubs, spokes, bows, shafts, etc.	302	4,000,000
	Lumber yards, cordwood, staves, shooks, and headings.	26,945	161,000,000
	Millwrighting	189	154,000
	Pianoforte and organ factories.	337	9,000,000
	Planing mills and sash and blind factories.	See	*Lumber Yards.*
	Saw mills, steam.	„	„
	Saw mills, water.	„	„
	Saw mills for wet logs exclusively.		
	Wheelwrighting	3613	3,000,000
	Wooden ware factories.	269	3,000,000
	Wood workers not otherwise provided for.		
x.	*Wood and Iron in conjunction.*		
	Agricultural implement works.	2076	35,000,000
	Car factories.	170	17,000,000
	Carriage factories.	11,944	35,000,000
	Gunsmiths.	615	606,000
	Hardware works.	580	14,000,000
	Not otherwise provided for.		
y.	*Wool.*		
	Carpet factories, rag.	474	310,000
	„ „ other than rag.	215	13,000,000
	Hat and cap factories.	483	7,000,000
	Woollen mills, stream, 1 cl.	2939	99,000,000
	„ mills, water, „		
	„ „ steam, other than 1st cl.		
	„ „ water, other than 1st cl.		
	Wool pulling.		
	Worsted factories.	102	10,000,000
z.	*Miscellaneous*—Specials.		
	Brickyard.	3114	21,000,000
	Butchering.	509	2,000,000
	Charcoal and coke works.	167	2,400,000
	Chemical and drug works.	292	13,000,000
	Coffee and spice mills.	156	4,000,000
	Furriers.	182	3,500,000
	Gas works.	390	72,000,000
	Glass works.	201	14,000,000
	Hair workers.	230	1,000,000
	Lime works.	1001	5,000,000
	Marble and stone works.	1972	16,000,000
	Photographic galleries.	1100	2,000,000
	Plaster mills.	321	2,500,000
	Potteries.		
	Roofing materials, including coal tar.	198	2,500,000
	Salt works.	297	7,000,000
	Saleratus factories.		
	Silk factories.		
	Soap and candle factories.	614	11,000,000
	Sugar refineries.	772	31,000,000
	Starch factories.	195	3,000,000
	Tar and turpentine works.	227	1,000,000
	Vinegar factories	181	1,000,000
	Miscellaneous specials not provided for under wood, iron, or other general classification.		

FIRE INS. CLAIMS.—See F. INS. LOSSES, ADJUSTMENT OF.

FIRE INS., CLASSIFICATION OF GOODS IN STORE.—In consequence of the increasingly serious character of fires in wharves, warehouses, and other stores, some years since, and more especially at the Tooley St. Fire in 1861, the F. offices were compelled to frame regulations regarding the storage of goods of an inflammable character; and some improvement in this respect was an immediate result; still, such an important matter could only be accomplished gradually, as the necessary arrangements became matured.

The introduction of large quantities of petroleum from the U. S., and the increasing use of jute, both tended to show the obvious necessity for some special steps in this direction.

The Select Parl. Committee on F. Protection, which sat in 1867, directed a good deal of attention to this subject in the examination of the witnesses called before it. The Rep. pub. the same year contains the following passages:

> Great conflagrations, attended with immense destruction of property, have occurred from the improper and indiscriminate storing of goods in warehouses. So serious are the results when a fire takes place among goods thus stored, particularly in some of the more inflammable or explosive, that warehouses constructed on the best principles of fire-proofing have been found to be of little use in arresting the progress of a fire. The losses which ins. cos. sustain from this cause induce them to make certain regulations regarding the classification of goods in storing.
>
> Improvements have taken place in the storing of goods, particularly in Lond. and Liverpool. In Lond. these improvements have been due mainly to the ins. cos., as there are no local Acts or municipal regulations there on the subject; in *Liverpool*, on the other hand, this subject has been considered so important that several local Acts have been obtained and municipal regulations laid down for the better storing of goods in the warehouses within the boundaries of the borough; but from the answer returned to the 6th question above stated, it would appear that in very few other towns is the subject attended to. *Your Committee would recommend that in the event of any legislation on this subject, the classification and storing of goods should be duly considered.*

The Committee also considered it desirable "that more stringent regulations should be made regarding the storing in warehouses and keeping in shops of turpentine, camphine, and similar spirits." This branch of the subject has been already dealt incidentally with under EXPLOSIVE SUBSTANCES.

Much practical good has resulted from the attention already drawn to this question.

FIRE INS., CLASSIFICATION OF RISKS IN.—In the earliest days of F. Ins. a certain general classification of risks became necessary, in view of the differing rates of prem. to be charged for ins., and was adopted.

The earliest classification of all consisted simply of two heads: (1) brick buildings; (2) timber buildings. This was the only distinction in 1681. The *Friendly* Fire, founded 1684, provided under Regulation III. that "houses having party-walls entire of brick or stone, to be esteemed brick houses; and houses not having party-walls of brick or stone to be esteemed timber houses." [F. INS., HIST. OF, 1684.]

At this early period *there was no ins. on the contents of buildings.* We have to wait until the commencement of the following century for that.

1710.—The first office which systematically insured goods and merchandize, including therein household furniture and stock-in-trade, was the *Sun*, founded this year. It exempted from ins. money, plate, jewels, pictures, china wares, tallies, and writings. Some of the offices founded about this period also exempted hay, straw, and unthreshed corn. Gunpowder was also usually excluded. [F. INS., CONDITIONS OF.]

1714.—The *Union*, or "Double Hand-in-Hand," founded this year for the ins. of goods and merchandize only, introduced for the first time the distinction of "half hazardous" and "hazardous," making therefore three classes of goods, and charging corresponding rates of prem. [F. INS. PREMS.]

1721.—In the proposals of the *Lond. Assu. Corp.*, first issued this year, among the exceptions, or risks not insured, are included "hay, straw, and corn unthreshed." Among the "special" hazards were included "chemists, distillers, sugar-bakers, maltsters, *houses and goods on London Bridge*, or other assu. more than ordinarily hazardous, by reason of the trade, nature of the goods, *narrowness of the place*, or other dangerous circumstances."

1722.—In the proposals of the *Royal Exchange* Corp., first issued this year, among the *exceptions*, or things not insured, were notes, bills, tallies, books of accompts, ready money, china and glass wares, jewels, plate, pictures, writings, corn unthreshed, hay and straw *not in trade.* Whether this qualification extended to all the items, or only the two last, does not seem at all clear. The classification was enlarged: that is to say, under its two general heads were brought in various trades and occupations previously excluded from ins. We intend to give these proposals entire under F. INS., HIST. OF, and it will be instructive to refer to them. From this date, or very soon after, the classification fell into settled lines.

This settled classification consisted of—(1) Common Ins.; (2) Hazardous; (3) Doubly Hazardous. Under *Common* Ins. were classed buildings covered with slate, tile, or lead, and built on all sides with brick or stone; the goods and merchandize therein not being hazardous; and there being no hazardous trade carried on. *Hazardous* Ins. consisted of timber and plaster buildings, and goods and merchandize therein, not hazardous; also thatched barns and out-houses (having no chimneys or adjoining to any buildings having a chimney) containing farming stock and implements; also brick or stone buildings wherein hazardous goods were deposited, or dangerous trades carried on. Among these trades were classed bakers, brewers, carpenters, chemists, colourmen, coopers, inn-holders, victuallers, malt-houses, sail-makers, ship and tallow-chandlers, stable-keepers. Among the dangerous stores were included hemp, flax, tallow, pitch, tar, rosin, turpentine, hay, straw, fodder, and corn unthreshed; apothecaries' stock, also cotton, sugar, oil, and spirituous liquors. Likewise all shops and warehouses having German or metal stoves with pipes. The *Doubly Hazardous* consisted of thatched buildings, and goods and merchandize therein; timber and plaster buildings wherein hazardous goods were deposited or trades carried on: among those goods being saltpetre, china, glass, or earthenware; among the trades, sea-biscuit bakers, oil-leather dressers, tallow-melters, wax-chandlers, and boat-builders.

This classification, with a few modifications from time to time, stood good for the first *century and a quarter* during which F. Ins. was practised in Gt. Brit. There was indeed a species of *Extra-hazardous* classification growing up alongside the preceding—hazards which were altogether excluded from protection in the early days of F. Ins. These embraced sugar-bakers, distillers, varnish-makers, manufacturing chemists, flax-dressers, sailcloth-makers, rope-makers, floor-cloth manufacturers, coach-makers, musical-instrument makers, umbrella-makers, and refiners of saltpetre, spermaceti, and oil; also cotton, flax, and lint mills, and the stock; also manufacturing premises containing kilns, stoves, ovens, or steam engines used in the process of manufacture, and the stock therein. All these came in time to be admitted within the range of ins., at such special rates as the judgment of the surveyor or the experience of the underwriter might indicate.

It is seen in the preceding classification that certain trades, while not in themselves at all dangerous, but wherein the stock is peculiarly liable to be injured by water, steam, or smoke, were regarded as hazardous or extra-hazardous, as they still continue to be classed. The offices usually limited their pol. to smaller sums on the more hazardous classes of risk.

1797.—The classification as above given was used by the *Sun*, in its "proposals" of this date, almost without variation.

1805.—The *Westminster* F. Office (founded 1717) introduced a new, and extended classification this year, bearing evidence of considerable care, and also of considerable advancement in the knowledge of risks. The prosp. said, "The ins. are divided into *four* classes, and the terms for ins. in the three first are inserted at the bottom of each class; but for the 4th class, or ins. by special agreement, the terms could not, from the nature of the thing, be specified."

Class I. or COMMON INS. 1. *Buildings* with all the external walls of brick or stone, standing alone (or separated by party-walls of brick or stone carried through the roof), and covered with slate, tiles, copper, lead, iron, or other metal, with brick or stone chimneys, wherein no hazardous trade or bus. shall be carried on, or hazardous goods or materials deposited. 2. *Goods*, etc.—Household furniture, goods, stock-in-trade, and materials not hazardous, deposited or contained in such brick or stone buildings as are above described, wherein no hazardous trade or business shall be carried on, or hazardous goods deposited. *Terms*, for any sum not exceeding £5000, 2*s*. p.c. p.a.

Class II. or HAZARDOUS INS. 3. *Buildings*—Such brick or stone buildings with such external walls and party-walls, and covered as described in No. 1, wherein any such hazardous trade or bus. as is described in No. 6 shall be carried on, or wherein any such hazardous goods or materials as are described in No. 7 shall be deposited. 4. Brick or stone buildings, not having party-walls of brick or stone carried through the roof; timber or plaster buildings covered with slate, tiles, copper, lead, iron, or other metal, wherein no such hazardous trade or bus. is carried on, or any such hazardous goods or materials deposited as are hereinafter described in Nos. 6 and 7; all shops and warehouses that shall have German or metal stoves and pipes fixed or set up therein. 5. *Goods*, etc.—Household furniture, goods, stock-in-trade, not hazardous, deposited in such buildings as are described in No. 4. 6. *Hazardous Trades*—Colourmen, tallow-chandler (not a tallow-melter, as that bus. falls under the 3rd class), oil-leather dresser, soap-maker, brewer, vinegar or sweet maker, printer, hot-presser, callenderer, currier, timber merchant, cooper, cabinet-maker, coach-maker, carpenter, hemp and flax dresser, working perfumer, bread baker (having an oven in the house), maltster, inn-holder, stable-keeper, ship-chandler, sail-maker, and similar trades and businesses to those already enumerated, shall be deemed hazardous, although carried on in such buildings as are described in No. 1. 7. *Hazardous Goods*—The goods, stock-in-trade and materials used in or belonging to any of the trades or businesses mentioned or referred to in the last number, and also the following goods or articles: hemp, flax, rosin, pitch, tar, turpentine, tallow, oil and spirituous liquors; *pictures*, the stock of apothecaries and pawnbrokers, hay and corn in stacks, and other *farming stock*, horses, harness, carriages and fodder, shall be deemed hazardous, although they may be kept or deposited in such buildings as are described in No. 1. *Terms*, for any sum not exceeding £3000, 3*s*. p.c. p.a.

Class III. or DOUBLY HAZARDOUS Ins. 8. *Buildings*—All brick or stone buildings not having such party-walls as are described in No. 1, timber or plaster buildings covered with slates, tiles, lead, copper, iron, or other metal, in which any such hazardous trade or business as is mentioned or referred to in No. 6 shall be carried on, or in which any stock-in-trade, goods or materials described as hazardous in No. 7 shall be deposited. All *thatched buildings*, although no hazardous trade shall be carried on, or any hazardous goods deposited therein, shall be deemed doubly hazardous. 9. *Goods* in hazardous buildings—All goods, stock-in-trade, and materials of any denomination, contained or deposited in thatched buildings, the stock of tallow-melters, wax-chandlers, boat-builders, lath-renders, musical-instrument makers, spermaceti and wax-refiners, seed-crushers, rope-makers, lampblack and cart-grease makers, *china*, *glass*, and pottery wherever deposited. *Terms*, for any sum not exceeding £1000, 5*s*. p.c. p.a.

Class IV. or Ins. by SPECIAL AGREEMENT. 10. Ins. for larger sums than are specified in the above classes, but not exceeding in any one risk £10,000, or under any circumstances that are not above specified, may be made.

In the "terms and conditions" were the following:

15. No buildings used for biscuit-baking, distill-houses, glass-houses, sugar-houses, cotton manufactories, turpentine houses, windmills or water-mills, oil-cloth manufactories, theatres, or other places used for public exhibitions, with scenery, machinery, or any apparatus of a similar nature, shall be insured in this office.

16. No houses or warehouses immediately adjoining to any buildings of the description mentioned in the last preceding art., or to any buildings where any of the trades therein mentioned shall be carried on, or any houses or buildings on either side of the River *Thames* below London Bridge, or at any sea-port town or place similarly circumstanced, or the household furniture, goods or stock-in-trade therein, shall be insured, or the ins. thereof renewed, without the consent of a board of directors, and without having a sufficient party-wall, as described in No. 1, between them; and unless the same shall also be situated at a distance of 10 yards at least from any wooden building whatever.

27. Watches, jewels, trinkets, china, glass, medals, or other curiosities, paintings, drawings, prints, and sculptures, carving, gilding, or history painting on walls, shall not be considered to be included in any ins., or to be paid for in case of loss, unless such respective articles shall be specified in the pol.

These last three clauses may be regarded as peculiar to that particular office. They are introduced here in order to show the knowledge of classification which at this date existed.

1809.—The *Albion* F. and L. in its proposals, dated 25th March this year, included in 1st Class (common) not only articles of the usual class, but also "farming stock generally; that is, in one sum on the stock and utensils in all the buildings, or in all or any of the yards or places, on any one farm, *without an average clause.*" In 2nd Class (hazardous) not only buildings and trades of the usual character, but also "buildings thatched and not having a chimney, nor adjoining to a building having a chimney, and goods in such buildings." Goods in a certain degree hazardous in buildings of brick and stone with party-walls, and covered with slate, tile, or metal, as "the stock and goods of coopers, soap-makers, bread-makers, tallow-chandlers (not melters), brewers, ship-chandlers, stable-keepers, maltsters, and others; the stock in timber yards; also hemp, flax, pitch, tar, turpentine, resin, and other articles." In 3rd Class not only the usual class of buildings and goods, but also "the stock and goods of tallow-melters, rope-makers, japanners, and others; also china, glass, pottery, sculpture, and other articles, which, on account of their fragility, are liable to destruction." "Buildings in which manufactures or processes are carried on, attended with peculiar danger, come under the 4th Class, viz. Special Risks. Refineries, distilleries, chemists' laboratories, turpentine works, steam engines, and cotton works"—Special prems. Buildings and goods on banks of Thames between the Tower and Limehouse, and same extent on opposite shore, subject to a small additional charge, "on account of the risks attending those districts."

1824.—The *Alliance*, in common ins. (Class 1), included not only the ordinary class of brick and stone buildings, with party-walls and slate, tile, or metal roofs, with non-hazardous goods therein, but *farming stock* generally, in one sum on stock and utensils, without average clause, 2*s*. p.c. The 2nd and 3rd Classes corresponded with those of the other offices of the period. The same practice was followed by the *Globe*, *Guardian*, and other first-class offices.

1825.—The *Atlas* Ins. Co. at this date arranged its risks under *five* classes, as follows: 1. Non-hazardous; 2. Hazardous; 3. Doubly hazardous; 4. Farming Stock (ins. at 2*s*. p.c.); 5. Risks to which none of the above rates will apply: "These may be assured by special agreement, on terms as moderate as the nature of them will permit." In the 1st, 2nd, and 4th classes the Co. would ins. up to £5000; in the 3rd up to £3000; for further amounts special agreement was necessary; as it was always in regard to class 5.

1832.—Mr. F. G. Smith, in his *Practical Remarks*, etc., published this year, included a schedule of special risks, and the minimum rates of prem. charged by the Scotch offices at this date. The details will be given under FIRE INS. PREMS.

1837.—In a prosp. of the *North of Scotland* Ins. Co., issued at this date, "Agricultural Stock" is included in the 2nd class, but if contained in slated or tiled buildings, was taken at 2*s*. p.c.; if in thatched buildings having no fireplace, 2*s*. 6*d*.; or in thatched buildings having a fireplace, 4*s*. 6*d*. There was a special "decreasing" scale by which the sum ins. was to be reduced at stated intervals, as £500 from 1st Oct. to 1st Nov., £400 to 1st Dec., £300 to 1st Jan., £200 to 1st Feb., £150 to 1st March, and £100 to 1st April. A pol. of this class was issued for a single payment of 2*s*. 9*d*.!

1870.—Among the British Tariff Offices the following is the classification now generally in force for buildings; and ***except in special cases the rate for a building is applicable to its contents also:***

Class I. Buildings used for private occupation only, which have external walls of brick or stone, with roofs of tiles, slates, or metal, and which, if adjoining any other building, are separated therefrom by a party-wall, from 1*s*. 6*d*. p.c. p.a. Buildings of this class not solely in private occupation, but in which no hazardous trade or manufacture is carried on and no hazardous goods are deposited, from 2*s*. p.c. p.a.

Class II. Buildings wholly or partly of timber or plaster, or not separated by a party-wall from any adjoining building as before described under Class I., covered with slates, tiles, or metal; in which no hazardous trade or manufacture is carried on, and no hazardous goods are deposited, from 2*s*. 6*d*. p.c. p.a.

Class III. Buildings covered with thatch, without regard to the construction of the walls, in which no hazardous trade or manufacture is carried on and no hazardous goods are deposited, from 4*s*. 6*d*. p.c. p.a.

Ins. may also be effected by special agreement on premises in which hazardous trades or manufactures are carried on, or hazardous goods are deposited; or which from their situation or other circumstances are exposed to special risk.

The *Church of England* Ins. Co. adopts a special classification of "Church Risks" as follows:

Church—1. On the building of the church known as . . . (exclusive of chancel) situate at . . . in the county of . . . stone or brick built and tiled or slated, £ . . . 2. On stained glass in windows in said church £ . . . 3. On pews, pulpit, desk, furniture and fittings in said church, £ . . . 4. On organ in said church, £ . . . 5. On bells in said church, £ . . .

Chancel—1. On the building of the chancel of such church, £ . . . . 2. On stained glass in windows in said chancel, £ . . . 3. On furniture and fittings in said chancel, £ . . .

School—1. On the building of the parochial school, situate at . . . in the county of . . . stone or brick built and tiled or slated, £ . . . 2. On school furniture and fittings therein, £ . . .

N.B.—The heating apparatus employed in both church and chancel should be described, although the proposal may apply only to one portion of the building. [See CHURCHES.]

But while *nominally* this classification exists, the practice has for some years been in the direction of inspecting, *i.e.* of surveying by an experienced officer *every risk offered*, other than those of private dwelling houses and contents; and even these where stove pipes and other internal hazards prevail; or where external "exposures" are suspected. The office, or its agent, merely on application issues a provisional receipt, protecting the risk for a given period—sufficiently long for inspection to be made—and the pol. is not issued until such inspection has been actually made. In the U. S. this process is designated "schedule rating."

It is worthy of remark in this connexion that some of the trades which are popularly supposed to be the safest are among the most dangerous. Thus, when people hear of a fire in an iron foundry, they are apt to conclude that it cannot do much harm. But an iron foundry is a heavy risk. For ten men engaged at the casting, there are, perhaps, as many as twenty employed in making the wooden models, and both these, and a stock of timber, all as dry as matches, are kept in the same premises with the furnaces. Then a fire on glass stores is supposed to be a mere nothing; but firemen regard it with great apprehension, because in bulk of stock the crates and straw are usually about double that of the glass.

The writer of an able art. on the "Inflammability of Lond." which appeared in the *Times*, 2nd Nov. 1871, says further hereon:

> Nothing is more deceptive than the outward appearance of some of the warehouses. You see an imposing stone building with the name of some well-known firm over the door, and you imagine that the limits of the stone block are the boundaries of the warehouse. But in all prob. some portion of every house within half an acre of that imposing building is rented by the same firm, who have broken through party-walls, and burrowed out underground passages leading into streets at all angles with that in which they have their principal entrance and counting-house. Beneath one modest façade in the city you can obtain entrance to seventeen or eighteen different houses, a considerable portion of every one of which is occupied by the same firm and filled with their goods. And this is only a specimen case. In nearly all such instances, the portions of those houses not rented as annexes to the warehouse are shops in which retail bus. is carried on, and over which neither the Building Act nor the merchant has any control.
>
> The use of gas is so general in many of the great warehouses, that everything in them is done by artificial light. Some years ago it was estimated that the movable property of Lond. might on any given day be taken at 900 millions. It is believed that at the present day an estimate of 1000 millions would not be above the mark. There is more than one private firm whose stock when full is value for a million at cost price; and there is a wharf between Southwark and Lond. Bridges, which rarely has at any hour less than that money's worth of consigned goods stored in its lofts. Half a million's worth is quite an ordinary stock for many of the waterside stores; and yet throughout the portion of the City to which we have been referring, the wharves and warehouses are stuck so closely together, that a whole range of ten or a dozen of them can only be regarded as one, instead of what they ought to be, so many separate risks. Throughout the whole commercial area there are a very bad class of "fire traps" in the shape of houses composed either entirely of wood, or of wood with some very thin brick walls between the framework. This adds immensely to the danger of Lond. from fire. A man may build a house, the main portions of which are of inflammable materials; but what will this avail him if he is surrounded by wooden structures! . . [FIREPROOF BUILDINGS.]

Again:

> The first and one of the most serious of the risks to which Lond. is exposed arises from the utilizing of premises to purposes for which they were never intended. Houses erected for private dwellings

have been converted into warehouses and manufactories; story after story has been piled up on walls never intended to bear them; space has been made by excavations, which shake the foundations, and basements designed for domestic kitchens have in hundreds of instances been converted into engine-houses to work machinery on the upper floors. The next, and perhaps still greater, risk is the incongruity of the various businesses carried on beneath the same roof. This is by far the most curious phase of Lond. commerce. Nothing but actual inspection can give any one an adequate idea of it. If the most accomplished incendiary were employed to arrange the materials for conflagration, he could scarcely succeed in placing them better than chance or necessity has done it throughout whole streets of territory. The general idea, no doubt, is that a warehouse is a warehouse only. Nothing can be more erroneous as regards the warehouses of Lond. You can hardly find one that does not contain a manufactory, and a manufactory of a dangerous kind. As a rule, whatever may be going on in the floors and lofts above, there is an extensive fabrication of packing-cases underground. Miners are not more numerous in Cornwall than packing-case makers are in the caves of Lond. warehouses. If there is here and there a cellar without them, it is occupied by coopers. It is scarcely necessary to say that in nearly every instance the work of both is carried on by gaslight. Look down beneath any of the great soft-goods warehouses, and the chances are ten to one you will see light timber, and shavings and binding laths in all directions, and jets of gas within a few inches of the ceiling. But packing-cases are indispensable, and so various are the sizes of the cases required every hour and every moment, that it is found necessary to have them made on the premises. Packing cases are so considerable an item in the expenditure of such warehouses, that the firms themselves find it to their advantage to manufacture them. Where the house does not make its own packing-cases, people in the trade pay as much as 250*l*. to 300*l*. a year for a cellar close at hand, which may perhaps be beneath an oil and colour or a tallow store. We have seen a regular packing-case manufactory which is only divided by a narrow passage from one of the largest oil and colour stores in the City. In it are one or two large lofts filled with sawing-machines, light wood, and bags of shavings; in a cellar beneath is the steam-engine which works the saws, and overhead is a large apartment, to which access is had by means of a ladder and trapdoor, and in which the manufacture of paper boxes in all its stages, including the dying and drying, is carried on. On this upper loft are a stove and hot-air pipes for drying the paper, and bags of paper shavings are piled up wherever there is room for them.

It is for these reasons that no classification of risks in regard to trades or occupations can be anything otherwise than delusive in Lond.; and the case is not far different in some of our other large manufacturing towns.

Classification of F. Ins. Risks in France, 1850.—The classification of risks in *France* is a much more complex, and apparently more scientific, process than in England. We take that in use by *La France Mutuelle* at this date; but we omit the references to prem., because, being a mut. asso., the prem. paid at starting was liable to be supplemented to meet deficiencies at the end of each year. The plan here prevailed of stating in the prosp. the *maximum*, and not the minimum rate. We begin with:

Ins. of Buildings and Other Properties not Removable.—Immovable properties were classified in various divisions, and made subject to the rates of the So. in different proportions, according to the risks which they offer, arising either from (1) *nature of construction*; (2) *their contents*; (3) *nature of contiguous objects.*

DIVISION I.—*Risks of Construction, or Risks arising from the Nature of the Property.* 1st Class comprises: (1) In towns or boroughs, the principal towns of the department, arrondissement or canton, and in villages with an aggregate pop. of not less than 2000 inhabitants, such buildings as are entirely constructed of stone, brick, or iron, with roofs of tiles, lava, slate, or metal, and in which the interior walls are for the most part of incombustible materials. (2) Buildings which are situated in any other rural commune, constructed in the interior and exterior of incombustible materials, and roofed like the preceding.

2nd Class comprises: (1) Buildings which, situated in towns, boroughs, or rural communes, described in the 1st Class (1), are constructed entirely or for the most part as 1st Class (1), and in which the interior walls are in wood panel or in composition. (2) Buildings in any other rural commune, constructed as above, in which the interior walls are half in incombustible materials and half in wood panel.

3rd Class comprises: (1) Buildings situated as in 1st Class (1), and constructed for the most part in wood panel, both in the exterior and interior, with filling-up in composition, clay, or mud, and roofed with tile, slate, or metal. (2) Buildings which, situated in any other rural commune, are constructed almost entirely of stone or brick, roofed with tile, slate, or metal, and of which the walls are in wood or composition. (3) Underwood of less growth than 30 years, and forests not of resinous trees.

4th Class comprises: (1) Buildings situated as in 1st Class (1), and entirely constructed of wood panel, with filling-up in composition, clay, or mud, or only in composition, and covered with tile, slate, or metal. (2) Buildings situated in any other rural commune, and almost entirely constructed in wood or in composition, and roofed with tile, slate, or metal. (3) Buildings used as bazaars, arcades, etc., when by their construction they come under the 1st or 2nd Class.

5th Class comprises: (1) Buildings which, situated either in town or rural communes, are entirely, or for the most part, constructed in stone or brick, in the interior or exterior, and roofed with shingle, thatch, or reeds, or any other similar material. (2) Buildings used as bazaars, arcades, etc., when by their construction they are placed in the 3rd or 4th Classes preceding.

6th Class comprises: (1) Buildings situated in towns, boroughs, and rural communes, which are constructed half in incombustible materials and half in wood panel, with filling-in of plaster, composition, clay, or mud, or entirely in composition, and roofed like the preceding with thatch or other combustible material.

7th Class comprises: (1) Buildings which are situated in towns and rural communes, and entirely constructed and roofed with combustible materials; (2) woods and forests of resinous trees.

DIVISION II.—*Risks of Contents and of Occupation.*—The seven classes of buildings above enumerated are exposed, either by nature of the removable contents, or the merchandize which they contain, or by reason of the trades exercised therein, to increased risks, the rates for which are added to the former. They form two heads: Risks of Contents, and Risks of Occupation.

1. *Risks of Contents.*—Under this head are comprised, by reason of their more or less inflammable nature, removable objects or merchandize in buildings insured, either occupied by private individuals, or in dépôts, magazines, workshops, or other appurtenances of such buildings. The risks under this head are divided into four classes, corresponding to the 4th, 5th, 6th, and 7th classes of the ins. of removable property, distinguished according to the nature of the objects removable and merchandize.

2. *Risks of Occupation.*—Under this head are classed all trades, in proportion to the nature of the materials employed, the process of manufacture, and the dangers to which the exercise of the occupation is liable.

"Risks of Contents" and "of Occupation" are not in general liable to the two rates of prem. added together; the higher rate of the two may be charged.

DIVISION III.—*Risks of Contiguity.*—When the property offered for ins. adjoins other properties exposed to the risks of fire, such as are distinguished in any of the classes above described, either by the nature of their construction, or of the removable objects contained in them, or of the trades carried on therein, the risk is considered to be increased, and liable to a further contribution added to the first. The risk of contiguity comprises three divisions. The first depends upon the construction of the contiguous buildings, according to the classification previously pointed out in the "Ins. of Buildings." The two others depend upon the nature of the "contents" of these "buildings," and of the trades exercised therein; and for these the reader must refer to the classifications in the ins. of removable property.

Insurance of Removable Property.—Furniture, removable objects, or merchandize, offered for ins., are subject to different rates, according to the dangers to which they are liable. 1. According to their nature. 2. According to their position, with regard to the construction of the buildings in which they are placed, as well as the removable objects contained therein, or the trades carried on there. 3. According to the construction, the contents, or the trade carried on in adjoining buildings. They are, consequently, classified in three divisions, each of which is again subdivided in the following manner:

DIVISION I.—*Risks arising from the Nature of the Property, combined with the Risks arising from the Construction of the Buildings.*—1st Class comprises: Furniture intended for the use or ornament of the apartments in which it is placed, such as beds, secretaires, chests of drawers, carpets, lamps, objects of art of ordinary character, and other articles not liable to be easily set on fire or damaged. Among the articles in the schedule which follow are: bedding (of all kinds), boots and shoes, cattle (in the open air), grain and vegetables, horse-shoes and nails, liquor in casks, etc., etc.

2nd Class comprises: Products and merchandize, which, not being easily combustible, are yet exposed, by their nature, or their brittleness, to be damaged by fire, such as (*inter alia*) animals (shut up), furs, hardware (of fine kinds), leather and hides, pins and needles, salts and soda, etc., etc.

3rd Class comprises: Products and merchandize of a more inflammable nature than those enumerated in the 2nd class, and which are either fragile, or easily injured by fire, by explosion, or in the act of saving them, such as (*inter alia*) animals (covered with straw), clocks, confectionery, dredging boots, feathers, hats, lace, looking-glasses, music (in shops), perfumery, umbrellas, etc., etc.

4th Class comprises: Products and merchandize of a still more inflammable nature than the preceding, or more likely to be injured by fire, etc., such as (*inter alia*) basket and brushmakers' stock, carriages, drugs, pianos and musical instruments, toys, wooden shoes (warehouses).

5th Class comprises: Products and merchandize, which, without being liable to spontaneous combustion, are likely to communicate fire easily, or to be seriously damaged by fire, by the means used to save them, as (*inter alia*) cotton waste, machines, pitch and tar, steam engines (in action), veneers.

6th Class comprises: Products and merchandize which burn readily, or are likely to catch fire from very slight causes, such as (*inter alia*) chemical products (in store), Eau de Cologne (in casks and in large quantities), ships (building), and boats, etc.

7th Class comprises: Products and merchandize of a hazardous character, subject to spontaneous ignition, and likely to give rise to fire or explosion, and which are not excluded by law, such as (*inter alia*) corn-ricks, silk-worms (in work), steam-boats (on the river), turpentine and varnish.

DIVISION II.—*Risks arising from the Nature of the Property, together with the Risks arising from the Trade, combined with the Risks arising from the Construction of the*

Buildings. This division is also classified into 7 distinct classes, comprising the movable property, the merchandize and materials of trade, workshops, and manufactories.

1st Class comprises (*inter alia*): Baths (keepers of public), carpenters, curriers, druggists, hatters, packers, plumbers, turners, etc., etc.

2nd Class comprises (*inter alia*): Bakers, basket-makers, colour-merchants, grocers, innkeepers (ordinary), printers, seed-merchants, wine and spirit dealers (retail).

3rd Class comprises (*inter alia*): Blond and lace (manufactories), candle manufactories (without melting furnace), druggists and grocers (wholesale, without laboratory), glass-works and looking-glass manufactories, innkeepers receiving carriers, salt-refiners.

4th Class comprises (*inter alia*): Bookbinders (with drying lines), breweries, candle manufactories (with melting furnace), druggists (wholesale, with laboratory), forges, foundries, etc., machinery-makers, porcelain, china, or pottery works, sulphuric acid (manufactories), tile manufactories (separate yards).

5th Class comprises (*inter alia*): Brandy distilleries, carriage manufactories, colours, hat (felt, straw, and silk) manufactories, perfumery manufactories, printers (with hot drying stoves), tile manufactories (with furnaces heated by coal).

6th Class comprises (*inter alia*): Animal-black, dressing of cotton stuffs, dyers (with hot drying stoves), laundries (with hot drying stoves), mills (corn) moved by water or steam, with less than six pair of wheels, paper manufactories (with drying lines), saw-mills moved by water, steam, or other machinery, sealing-wax manufactories, spirit distillers (by steam), steam-boat building yards.

7th Class comprises (*inter alia*): Beetroot-sugar manufactories (with stove without refinery), cotton-spinning (without any of the processes preceding the spinning), dyers (hot drying stove separated), paper manufactories (old process), saw-mills for ordinary wood and veneers, spirit distilleries (ordinary process), starch manufactories (with machinery), sugar refineries (baking and heating by steam).

DIVISION III.—*Risks of Contiguity.*—By contiguity the risks are increased when property proposed for ins. is situated in buildings which adjoin others exposed to dangers provided against in the above classification. These risks are divided into 4 classes, corresponding to those of the divisions for the ins. of buildings.

Then there are "risks according to occupation," not included in any of the preceding classes: as manufactors of chemical products (inflammable), lampblack, madder, resinous gas, rope with pitch and tar, turpentine and varnish, varnished leather, wadding, waxed and gummed cloths. Also cotton-spinning factories, flax and hemp factories, etc. The rates on these depend upon the factories and workshops being placed in the 1st Class according to construction of buildings.

Increase of Risks in Regard to the Position of Objects Insured.—In case of goods, materials, or merchandize insured, being situate in a building in which a more dangerous trade is carried on, the rates are those for the highest risk.

This, in common with other French Cos., also insures against risk of explosion of gas for lighting, by a separate small charge varying with the nature of the buildings and stock; also against the "risks of tenants," *i.e.* liability to landlord in case of burning the house, and against "indemnification of neighbours," under the Code Napoléon.

All of the preceding risks have their own peculiar rates. The bus. in France has, at least in theory, been reduced almost to a science. [FRANCE, sub-heading *Fire*.]

Classification in the U.S., 1800.—The *New York* F. Ins. Cos. commenced a classification of risks about this date; but Mr. Griswold tells us that the classification of at least one of the principal offices "was copied from the *Phœnix Ins. Co.* of Lond." adding, "This T. classifies the *buildings*, and refers to goods, hazardous and non-hazardous, but no information is given as to what goods were included in those several classes at that time." The classification on the U.S. pol. was as follows:

No. 1.—*Hazards of the first class.* Brick or stone buildings covered with slate, tile, or metal. *Goods* not hazardous contained in such buildings. *For sums not exceeding* 10,000 dols. in one risk, 25 cents. p. 100 dols. p.a.

No. 2.—*Hazards of the second class.* Brick or stone buildings covered with wood. Goods not hazardous contained in such buildings. Hazardous goods contained in buildings of the first class. *For sums not exceeding* 10,000 dols. in one risk, 37½ cents. p. 100 dols. p.a.

No. 3.—*Hazards of the third class.* Buildings the sides of which are part of brick or stone and part of wood. Goods not hazardous contained in such buildings. Hazardous goods contained in buildings of the second class. *For sums not exceeding* 10,000 dols. in one risk, 50 cents. p. 100 dols. p.a.

No. 4.—*Hazards of the fourth class.* Buildings the sides of which are entirely of wood. Goods not hazardous contained in such buildings. Hazardous goods contained in buildings of the third class. *For sums not exceeding* 10,000 dols. in one risk, 75 to 100 cents. p. 100 dols. p.a. There is added this note:

> This manner of classing hazards will give a general idea of the rates of ins., but there will necessarily be an increase of prem. in all cases where the local situation and other circumstances increase the risk: such as joining or being contiguous to wooden buildings, or buildings occupied in carrying on hazardous bus.; distances from water; to engines, or firemen in the town, or place, etc. The prems. may also in some cases be reduced on wooden buildings in the country, when standing

single or detached, or attended with circumstances of peculiar security. But in all cases, if the sum to be insured on or in the same building exceeds 10,000 dols., an add. prem. will be required.

☞ Soap-boilers, tallow-chandlers, brewers, maltsters, bakers, rope-makers, sugar-refiners, distillers, chemists, varnish-makers, stable-keepers, tavern-keepers, china, glass, or earthenware sellers, oil and colourmen, turpentine works, paper mills, printing houses, coopers, carpenters, cabinet-makers, coach-makers, boat-builders, ship-chandlers, apothecaries, theatres, mills and machinery, and all manufactories that use fire heat, are deemed extra-hazardous, and must be particularly described in the pol.; and for such risks an add. prem. will be required.

1814.—Mr. Griswold says the classification of risks at this date was increased to 7 classes; but does not tell us what the classes were.

1836.—With slight extensions and modifications, the T. used at the beginning of the century continued up to 1835, when the great fire in N.Y. occurred. This led to the adoption of a new classification of goods, as follows:

Not Hazardous.—Goods not hazardous are to be insured at an advance of 5 cents on the rates of the buildings in which they are contained, and are such as are usually kept in dry goods stores, including coffee, flour, household furniture and linen, indigo, paints ground in oil, potash, rice, spices, sugars, teas, threshed grain, and other articles not combustible.

Hazardous.—The following trades and occupations, goods, wares, and merchandize are considered hazardous, and are charged 10 cents p. 100 dols. in addition to the rate of the building in which they are contained, viz. Basket-sellers, block and pump makers, copper-smiths, china or earthen or glass ware, or plate-glass in packages, boxes, or casks, cotton in bales, flax, grocers with any hazardous articles, gunmakers or smiths, hat-finishers, hay pressed in bundles, hardware, hemp, looking-glasses in packages or boxes, Manilla grass, milliners' stock, oil-paper in reams, paper-hangings, pitch, porter-houses, rags in packages, sail-makers, saltpetre, spirituous liquors, sulphur, tallow, tar, taverns, turpentine, victualling-shops, window-glass in boxes, and wooden-ware sellers.

Extra-Hazardous.—The following trades and occupations, goods, wares, and merchandize are deemed extra-hazardous, and will be charged 25 cents and upwards p. 100 dols. in addition to the rate of the building in which they are contained, viz. Alcohol, apothecaries, aquafortis, basket-bleachers or makers, blacksmiths, boat-builders, booksellers' stock, brushmakers, cabinet-makers' stock, carvers, china or earthen or glass ware, or looking-glasses unpacked, and buildings in which the same are packed or unpacked, chocolate-makers, colourmen's stock, comb-makers, confectioners or their stock, coopers, druggists, ether, founders, grate-makers, hats of chip or grass or straw bleaching, jewellers' stock, lamp manufactories, lime unslacked, mathematical or musical or optical instrument sellers' or perfumers' stock, morocco manufactories, pictures, platers or plated-ware manufactories, prints, printers of newspapers, rag stores, ship-chandlers, silversmiths' or stationers' stocks, soap-makers, spirits of turpentine, stove manufactories, tin or sheet-iron workers, tobacco manufactories, turners, toy-shop keepers' stock, upholstery manufactories, varnish, watchmakers' stock, tools, window or plate-glass unpacked.

Special Mem.—Bakers, bark-mills, blind-makers, brewers, brimstone works, brass founders, book-binders, cabinet-makers' or carpenters' or coach-makers' or chair-makers' workshops, chemists, cotton-mills, distillers, dyers, fences, flax-mills, frame-makers, fulling-mills, grist-mills, gunpowder, hat manufactories, houses building or repairing, ink or ivory-black or lampblack manufactories, livery stables, timber or mahogany yards, malt-houses, metal and other mills of all kinds, musical-instrument makers, oil-mills, oil-boiling houses, paper-mills, piazzas and privies of wood, printers of books and jobbing, ropemakers, sashmakers, saw or snuff-mills, shipbuilders' stock in the yard, ships or other vessels in port and their cargoes, or when building or repairing, stables, steam engines, or boats, sugar refiners, tallow-melters or chandlers, tanners, tar-boiling houses, theatres, or other places of public exhibition, timber yards, turpentine manufactories, type-founders, varnish-makers, wool-mills, and generally all manufacturing estab. and all trades requiring the use of fire heat, not before enumerated.

Country Houses.—Country houses, standing detached from other buildings, will be insured at 60 to 90 cents per 100 dols. Barns and stables in the country at 85 cents. and upwards.

☞ Ships in port or their cargoes, and ships building or repairing, may be insured against fire.

1860.—About this date the classification was considerably extended and divided into 2 *general* classes: (1) embracing *not hazardous, hazardous* No. 1, and *extra-hazardous* No. 1; (2) embraced *hazardous* No. 2, *extra-hazardous* No. 2, *extra-hazardous* No. 3, and *specially hazardous.* No. 2 of the several classes and *specially hazardous* referred to trades and occupations more particularly. This extended form remained in use until the adoption of the classes of the National Board form of pol.—*Griswold.*

1874.—The N. Board Committee on Statistics (with Mr. Henry H. Hall for its Chairman), in its Rep. for 1874, says on the subject of classification:

> The most serious defect in existing systems is that of a general grouping in one class of certain hazards identical in one feature perhaps, *but in complete variance in their entirety as risks for ins.* Especially is this true in the general classification of farm property; and your Committee feel they cannot be too emphatic in their condemnation of the practice of grouping under one general heading the diverse hazards of a modern farm. This practice is the cause of the well-nigh universal stupidity of insuring a farm dwelling, with its barns, stables, cyder-press, etc., under a specific form at a uniform rate. If this practice is sound in farm property ins., it is inconsistent to oppose its application to the property of a manufacturing estab. embracing separate risks of every degree of hazard.

This emphatic expression must carry conviction. The classification which this Committee is adopting tentatively is that which we have given under F. INS. CENSUS.

The following is the Classification of Risks under the National Board pol.:

Not Hazardous—Limited to Wholesale Stocks only.

Carpets.
Dry goods, foreign and domestic, exclusively in unbroken and unopened packages.
Coffee.
Flour.
Furs and peltries in unbroken packages.
*Grocers' stocks.
Hides and sole leather (with average clause, 20 per cent. deduction).
Provisions—butter and cheese.
Rice.
Spices.
Sugars.
Teas.
Threshed grain.
Tobacco, plug and twist, in boxes or kegs (wholesale) *a.*
Whalebone.

a. SeeExtra-Hazardous.

*** This is not understood to embrace stocks mainly composed of liquors.**

Hazardous.

*Boots and shoes (wholesale), including India-rubber boots and shoes.
Bristles—hair cloth (wholesale).
Card printing (by hand power).
*Carpets (retail stocks of).
*Carriage trimmings.
*Carriages and sleighs.
*Clothing (wholesale stocks of), ready made.
*Cordage.
*Cotton batts and wadding.
*Cotton yarns.
Drugs, dry, in packages, importers' stocks of.
*Dry goods (wholesale stocks of).
*Firecrackers, in packages.
Flax, in bales.
Flocks.
*Fruits (wholesale stocks of).
*Furs, unpacked.
*Glass, window, in boxes.
*Grocers' stocks (retail).
Gum copal.
Gum shellac.
*Gunny cloth and gunny bags.
Gutta percha, unmanufactured.
*Hardware (staple), in packages.
*Hatters' furs (stocks of).
Hats and caps (wholesale stocks of), without manufacturing.
Hemp, in bales.
*Hops, in bales.
India-rubber, unmanufactured.
*Indigo.
*Iron ware, wholesale (also stoves, tin ware, and hollow ware).
*Iron goods, ornamental, japanned, and bronzed (stocks of).
*Leather, morocco and findings.
*Machinery (stocks of), on sale.
*Nails (stocks of).
Manilla grass, in bales, men's straw hats and caps (stocks of).
Oakum, in bales.
Oil (fish and vegetable).
Oil cloths (stocks of).
Paints, ground in oil.
*Paper, in reams and straw boards.
*Paper hangings (wholesale).
*Pins (stocks of).
Pot, pearl and soda ashes.
Sail making.
*Saddlery and harness (stocks of).
*Salt.
*Sewing machines (stocks of).
Sisal grass, in bales.
Sulphur.
Tallow.
*Trunks (stocks of).
Wines and liquors, in packages (importers' stocks of).
Whisky, in barrels (stocks of).
Wool.

NOTE.—The star (*) prefixed to the trades and occupations, goods, wares and merchandize in the classes of hazards, denotes that the said trades, etc., do not affect the rate on the building or the contents thereof.

Extra-Hazardous.

Agricultural implements (including seedmen's stocks).
Alcohol.
Apothecaries' stocks.
Artificial flowers.
*Artists' materials.
Asphaltum.
*Auction stores.
Bag making (cloth), by hand power.
Bakeries, with ovens outside the building, and using coal only.
*Band-boxes (stocks of).
Basket selling.
Billiard saloons and contents.
Blacksmith shops.
Block and pump making.
*Booksellers' stocks.
Boot and shoe manufacturing (by hand power only).
*Boots and shoes (retail).
Bottling cellars.
*Brushes (stocks of).
Brush makers' stocks.
*Cabinet ware (stocks of), without manufacturing, repairing, upholstering, or varnishing.
Car springs, gutta percha or India rubber.
Carving (by hand power).
China, or earthen or glass ware (wholesale and retail stocks of), with privilege of packing or unpacking.
*China, or earthen or glass ware, unpacked.
*Clothing, ready made (retail stocks of); also merchant tailors'.
*Confectioners' stocks.
Copperplate printing.
Coopers' shops, strapping boxes only.
Corset making.
*Corks (stocks of).
*Cutting and sewing furs, without fire heat.
Daguerreotypes and photographic stocks.
Daguerreotypes and photographic establishments.
*Dress trimmings (stocks of).
*Dry goods (retail stocks of).
*Earthenware, unpacked.
Eating houses.
Electro-plating.
Essential oils.
*Extract of wool.
*Fancy goods (wholesale and retail stocks of).
*Feathers (stocks of).
*Fishing tackle.
*Fringes (stocks of).
*Fringe making (by hand power).
Fruits (retail stocks of).
*Furriers' and hatters' stocks, unpacked.
Gas fitting.
Gas fixtures.
*Gentlemen's furnishing goods (wholesale and retail stocks of).
Gilding.
*Gimps (stocks of).
*Glass, window or plate, unpacked.
*Glass ware, unpacked,—looking-glasses, unpacked.
Gun repairing.
Gutta-percha goods (except boots and shoes).
*Hardware and cutlery.
*Hats and caps (retail), without manufacturing.
Hat (straw, grass, or chip) bleaching.
Hay and straw, pressed in bundles.
Hoop skirt manufacturing (by hand), without fire heat.
*Hoop skirts and hoop skirt materials (stocks of).
*House furnishing goods (retail stocks of).
India-rubber goods (stocks of), except boots and shoes.
*Iron, hoop, sheet and rod.
*Jewellers' and watchmakers' stocks.
*Ladies' and children's furnishing goods (stocks of).
*Laces and embroideries (wholesale).
*Lager beer saloons.
*Lampsellers' stocks, without camphene, burning fluid, spirit, gas, or kerosene.
Lime, unslacked (stocks of).
Liquors, in glass, unpacked.
Lithographers.
Looking-glasses (stocks of), or with privilege of packing and unpacking.
Map mounting and varnishing.
Matches on sale (stocks of).
*Metals, in bars, pigs and tin plates.
Military goods (stocks of).
*Millinery goods (wholesale and retail stocks of).
*Needles (stocks of).
*Optical and mathematical instrument makers' stocks.
Painters' stocks.
Paper boxes (stocks of).
*Paper hangings (retail stocks).
*Paper collars.
Pawnbrokers' stocks.
Percussion caps.
*Photographic stocks.
*Pianofortes in warerooms.

•Perfumers' stocks.
Picture-frame joining.
Pitch.
Plumbing and pewtering.
Pocket-book makers' stocks.
Pocket-book making, without use of fire heat.
•Porter houses, bar rooms, sample rooms and retail liquor stores.
•Precious stones (in strictly fire-safes, 30 p.c. deduction).
Rags, in bales.
Rectifying liquors, by cold process only.
Refectories.
Resin.
Restaurants.
Saddlery and harness manufacturing.
•Sheet iron and copper ware (retail).
Ship chandlery.
•Shirt manufactories, without ironing.
Silversmiths' stocks.
•Silver and plated ware.
Spirits of turpentine.
•Stationers' stocks.
•Stoves (retail stocks of).
•Straw goods (wholesale and retail stocks of).
•Tailors' trimmings (stocks of).
Tar.
Taverns.
Teas, coffees and spices (retail stocks of).
Tin, or sheet iron or copper working.
•Tin and hollow ware (retail).
•Tobacco, leaf and cut, cigars and snuff (wholesale and retail).
Tow, in bales.
Turpentine.
•Umbrellas and parasols (wholesale and retail), with privilege to put together and finish by hand only.
Upholsterers' stocks.
•Watchmakers' tools.
•Watches, in packages, as imported.
Wine, in glass, unpacked.
•Worsted and fancy wools (importers' stock of).
•Yankee notions.

Specially Hazardous.

Acids, nitric, sulphuric, muriatic and other corrosive acids.
Bakeries, ovens within the building, or using wood or shavings.
Bookbinderies.
Boot and shoe manufactories, with fire heat.
Box repairing.
Breweries.
Brush manufactories.
Burning fluid.
Cabinet making, and stocks of cabinet ware, with privilege to varnish, upholster, and repair.
Camphene on sale.
Coffee and spice mills.
Confectionery manufactories.
Cooperage manufactories.
Cotton brokers' samples.
Cotton, in bales.
Cotton, loose.
Cotton, unpacked.
Drug stores, with privilege of compounding.
Druggists' stocks (wholesale).
Ether.
Fireworks.
Flax and hemp, unpacked.
Fur, silk or wool hat finishing, with use of fire heat to steam and block the bodies.
Gas fixture manufactories.
Gold pen making.
Hat and cap manufacturing and finishing.
Hemp, unpacked.
Hoop skirt manufactories, by machinery or fire heat.
Houses being built, altered or repaired.
Japanning.
Jewelry manufactories.
Jewelry case making.
Junk shops.
Lamp manufactories.
Lampsellers' stocks, with privilege of keeping camphene or kerosene.
Laundries.
Livery stables.
Manilla and Sisal grass, unpacked.
Mungo.
Musical instrument, manufactories and stock.
•Musical instruments.
Nitrate of soda.
Oiled clothing (stocks of).
Oils, resin and similar.
Packing buildings and yards.
Paper bag manufactories.
Paper box and band-box making.
Perfumery manufactories.
•Pictures and prints.
Pocket-book making.
Printing of books and job printing.
•Printed music.
Provisions in process of being smoked.
Rag stores.
Rags and paper stock.
Saltpetre.
Segar manufactories.
Shoddy.
Silversmiths' manufactories.
Smoke-houses.
Spirit gas making or selling.
Stave yards.
Steam boilers, in use.
Stove manufactories.
Theatres and other places of public exhibition.
Tobacco manufactories.
Tow, unpacked.
•Toys (shopkeepers' stock of).
Trunk making.
Type or stereotype foundries.
Umbrella manufactories.
Upholstery manufactories.
Window-shade painting.
Wood and willow ware, and baskets (stocks of).
Wood waste, and *generally* all mills, workshops, and manufacturing establishments, and all trades and occupations requiring the use of fire heat, not before enumerated.

NOTE.—500 *lbs. Saltpetre may be allowed with Hazardous or Extra-Hazardous Goods, without additional charge.*

[FIRE INS. CENSUS.] [FIRE INS., CONDITIONS OF.] [FIRE INS. PREMS.] [FIRE INS., SELECTION OF RISKS.]

FIRE INS., COMPULSORY.—In the several countries of Europe wherein the State controls the bus. of F. Ins. it is compulsory upon the owners of property to insure, *i.e.* to pay the contribution or tax levied ann. to defray the fire losses. It is the same in certain continental cities in regard to buildings. The whole subject will be discussed under FIRE INS., MUNICIPAL.

FIRE INS., CONDITIONS OF.—In the early days of F. Ins., and indeed up to about the commencement of the present century, the conditions on which the bus. was conducted were not printed upon the pol., but were embodied in the "proposals" which were from time to time issued by the offices, and which were analogous in most respects to our modern prosp. Their contents were indeed rather in the shape of regulations than of conditions, as the term is now understood; and this was indeed the fact: for conditions grow out of the necessities of the bus. These "proposals" were made part of the contract of ins. by the insertion of some such words as these in the pol.: that the proposer was ins. in a certain sum "according to the exact tenor of their printed proposals, dated . . ." [a date being given to estab. identity]. A copy of these proposals was issued with the pol., in fact not unfrequently constituted a wrapper or envelope for the pol. [see case of *Routledge* v. *Burrell*, under date 1789, in this art.]

The contents of these proposals were pretty uniform amongst the early offices, and were much as follows—embodying directions to proposed insurers, as well as a statement of the conditions of ins.

1. All pol. shall be signed and sealed by 3 or more trustees or acting members. By which pol. may be insured houses, etc. [enumerating the leading risks the office would undertake] except [enumerating exceptions].

2. Houses, buildings, and goods in trust, and merchandize on commission (except as aforesaid) [that is, excluding risks not accepted by the particular Co.], may be insured, provided the same are declared in the pol. to be on trust or commission, but not otherwise.

3. On bespeaking pol., all persons are to make a deposit for the pol., stamp duty, and mark; and shall pay the prem. to the next quarter-day, and from thence for one year more at least, and shall, as long as the managers agree to accept the same, make all future payments ann. to the said office within 15 days after the day limited by their respective pol., upon forfeiture of the benefit thereof; and no ins. is to take place till the prem. be actually paid by the insured, his, her, or their agent or agents [see case of *Tarleton* v. *Staniforth*, under date 1794 in this art., and *Salvin and others* v. *James and Langston*, 1805].

4. The several heads of ins. are [then was enumerated common ins., hazardous ins., and doubly hazardous, of which we have given details in our art. F. INS., CLASSIFICATION OF RISKS].

5. If ins. are desired for any larger sums than are specified in the T. of ann. prems., a special agreement may be made for the same; special agreements may also be made for mills and stock therein, etc. [then would be enumerated any "special" hazards the office was willing to undertake; several of the early offices did not take any of these].

6. Any number of houses, out-houses, household furniture, printed books, prints, stock-in-trade, goods in trust or on commission, or wearing apparel and plate therein, may be ins. in one pol., provided the sum insured on each is particularly mentioned.

7. To prevent frauds, persons insured by this office shall receive no benefit from their pol., if the same houses or goods, etc., are insured in any other office, unless such ins. be first specified and allowed by an indorsement on the back of the pol., in which case this office will pay their rateable proportion on any loss or damage; and if any person shall ins. his, her, or their, mills, buildings, manufactories or houses, utensils, stock-in-trade, goods, wares or merchandize, and shall cause the same to be described otherwise than as they really are, so as the same be insured at a lower prem. than the specially hazardous (under art. 5) may require, or at a lower rate than proposed in the T. of prems., such ins. shall be of no force, nor shall the person insuring receive any benefit by such pol. in case of any loss or damage.

8. No loss or damage to be paid on fire happening by invasion, foreign enemy [civil commotion], or any military or usurped power whatever. [This exemption was first framed by the *Lond. Assu. Corp.* in 1726, with the exception of the words "civil commotion," which were introduced by the *Sun* Office into its proposals in 1727—see cases under dates 1767, 1780, in this art.]

9. When any person dies, the pol. and interest therein shall continue to the heir, executor, or administrator, respectively, to whom the right of the premises insured shall belong; provided, before any new payment be made, such heir, executor, or administrator do procure his or her right to be indorsed on the pol. at the said office, or the prem. to be paid in the name of the said heir, executor, or administrator. [This regulation was not adopted by all the offices—see cases under 1729 and 1743 in this art.]

10. Persons changing their habitations or warehouses may preserve the benefit of their pol., if the nature and circumstance of such pol. is not altered; but such ins. will be of no force till such removal or alteration is allowed at the office, by indorsement on the pol. Ins. on buildings and goods are deemed distinct and separate risks, so that the prem. on goods is not advanced by reason of any ins. on the building wherein the goods are kept, nor the prem. on the buildings by reason of any ins. on the goods.

11. Persons insured, sustaining any loss or damage by fire, are forthwith to give notice thereof to the office, and as soon as possible afterwards deliver in as particular an account of their loss and damage as the nature of the case will admit of, and make proof of the same by their oath or affirmation, according to the form practised in the said office, and by their books of account or other vouchers, as shall be reasonably required; and procure a certificate under the hands of the minister and churchwardens, together with some other reputable inhabitants of the parish, not concerned in such loss, importing: that they are well acquainted with the character and circumstances of the person or persons insured, and do know or verily believe that he, she, or they, really and by misfortune, without any fraud or evil practice, have suffered by such fire the loss and damage as his, her, or their loss, to the value therein mentioned; but till such affidavit and certificate of such insured's loss shall be made and produced, the loss money shall not

be payable; and, if there appear any fraud or false swearing, such sufferers shall be excluded from all benefit by their pol. And in case any difference arise between the office and the insured touching any loss or damage, such difference shall be submitted to the judgment and determination of arbitrators indifferently chosen, whose award, in writing, shall be conclusive and binding on all parties. [See cases under date 1786, 1789, and 1795 in the following art.]

N.B.—When any loss is settled and adjusted, the insured will receive immediate satisfaction for the same, without any deduction or discount [and are not liable to any covenants or calls for contributions to make good losses].

☞ To encourage the removal of goods in cases of fire, this office will allow the reasonable charges attending the same, and make good the sufferers' loss, whether destroyed, lost, or damaged by such removal.

12. No receipts are to be taken for any prems. of ins. but such as are printed and issued from the office, and witnessed by one of the clerks or agents of the office.

1684.—The first stipulation amounting to anything like a condition we meet with occurs in the regulations of the *Friendly* Fire, founded this year, and its operation appears to be clearly against the asso.: "XV. No question to be admitted about the description, quality, or value of any house that shall be burnt; but the money in the pol. expressed to be paid, after the rate declared as aforesaid."

1704.—The Lombard House Fire Ins. Scheme, set on foot this year for ins. of *Household Furniture* and *Stock-in-Trade*—the first time ins. had been extended to the contents of buildings—incorporated in its regulations the following conditions:

> XV. Losses not to be admitted till an inventory upon oath of the quantities, qualities, and real values be given in. XVI. And the sufferer has sworn he was no way guilty of, or accessory to, causing the fire, or embezzling any goods; and that he does not know where any of them are. XVII. And has also declared upon oath whether the house whence the goods were lost was brick or timber, and on fire, or directly over against the house on fire, or within five houses of one of them; and *that the goods were not insured in any other office*. . . . . . XXV. No deeds, writings, or any manuscripts shall be insured.

1706.—In the new "proposals" of the *Friendly Fire*, pub. this year, there is the following: "Upon sale or mortgage of houses insured, the pol. are to be transferred, and the transfer registered at the office for the better security of both parties; and to prevent all disputes between the buyers and sellers, or mortgagors and mortgagees."

1710.—The *Sun* F., which was the first office to ins. houses, goods, and merchandize, *beyond the Bills of Mort.*, i.e. out of Lond., embodied in its scheme several conditions which were new. These were as follow:

> V. Every one that would insure both his or her house and goods, etc., *must take out distinct pol.;* which shall extend only to what belongs to one tenement. . . .
>
> VI. These proposals do extend to insure on merchandizes, wares, household goods, furniture, etc., excepting money, plate, jewels, pictures, china wares, tallies, and writings. . . .
>
> X. When any sufferer receives his or her claim, 5 p.c. shall be deducted out of it for defraying the charge and expenses of officers and others employed to make inquiry how and by what means the fire happened, *as it is usual in other fire offices.*
>
> XI. Every sufferer must make out his or her loss and damage upon oath before a mayor or chief magistrate of *the next adjoining town, in presence of the Co.'s agent*, within 10 days after the fire, and carry that affidavit to the minister or churchwardens of the parish in which the fire broke out, and some other eminent housekeeper of the said parish, *especially such as live near the place where the fire began*, but have themselves sustained no damage thereby; and are best acquainted with the person, reputation and circumstances of the said sufferer, who shall sign a certificate, that they do know or believe nothing to the contrary, but that the sufferer has really and by misfortune lost by fire the sum mentioned in his affidavit: upon sending up which affidavit and certificate to the Co., he or she shall receive his or her claim. *But if there appear any fraud or perjury in such sufferer, he or she shall be excluded from any right or interest in these proposals.*
>
> XII. If any person insured removes his or her habitation, he or she must give notice, and have his or her pol. changed by the Co.'s agent, paying the stamp duty only.

By Art. XIV. printed receipts signed by the Co.'s agents were to be given for the successive quarterly payments. XV. Persons might discontinue their pol.; and on death the interest therein passed to the executor or administrator.

The complete regulations are given in our art. FIRE INS., HIST. OF.

1721.—In the scheme of the fire department of the *Lond. Assu.* Corp., which commenced operations this year, the conditions are more clearly defined than any we have seen of an earlier date. Thus:

> IX. To prevent frauds, if any buildings or goods assured with this Corp. are or shall be assured with any other co. or so., the pol. granted by this Corp. is to be null and void, unless such assu. is allowed by indorsement on the pol. . . . . .
>
> XIV. In adjusting losses on houses, no wainscot, sculpture, or carved work, is to be valued at more than 3*s.* per yard.

There was an *arbitration clause* in case of disputes. It is distinctly stated that there is no *average clause* in the pol., and that the insured in case of loss receive the full damage sustained, "deducting only 5 p.c."

1722.—The *Royal Exchange* Corp. settled its scheme for fire ins. this year. It is decidedly in advance as regards completeness of anything which had previously appeared. There were several new conditions. Thus, 3rd. After money had been deposited on application, if the Corp. did not approve the risk, the money might be returned. 7th. In the case of loss or damage by fire of houses, buildings, or goods, *the Corp. might either pay in money, or reinstate, at its own option.* This is followed by an *arbitration clause* in case of difference. 9th. Merchants and others having goods on commission might insure the same for the benefit of the proprietors. These "proposals" are given *in extenso* under FIRE INS., HIST. OF.

1729.—The first reported case on a pol. of F. ins. occurred this year. It is the case of *Lynch* v. *Dalzel*, on a pol. issued by the *Sun* F. on the 28th July, 1721, on the Angel Inn, at Gravesend, and the goods therein, and the stable, in the whole for £1000. A prem. of 5*s*. was to be paid within 15 days after each quarter-day. The pol. was (1726) assigned, with the consent of the office, and a *year's prem.* paid to Christmas, 1727. In the August of that year the house was burned down; and other persons (to whom no assignment had been consented to by the office) claimed to be owners. The Co. resisted payment; a bill was filed, and dismissed. The Court *held*, that the party insured must hold the property at the time of the loss. If before the loss (as here) he has sold the property, and after the loss assigns the pol. to the purchaser, without the consent of the Co., the latter is not liable to the assignee. The decree was appealed against, but confirmed. The reporter, after giving a brief account of the origin of the office, says:

> The So. being sensible that such an extensive undertaking might give great opportunities for frauds, took all possible precaution for preventing them; and therefore their pol. for ins. were so framed as to be contracts only between the office and the persons insuring: the loss secured against being thereby restrained and confined to the contracting persons only; and the pol. referred to certain printed proposals containing the essential terms and conditions between the insurers and the insured, copies of which proposals were always delivered with the pol.

1738.—It was resolved by the members of the *Hand-in-Hand* that where the interest in any property insured ceased as to the particular person insured, before the expiration of the 7 years for which the ins. had been effected, upon declaration thereof being made at the office, the account might be adjusted, *i.e.* the bal. of prem. or deposit for the unexpired portion of the term be returned.

1743.—In the case of *The Saddlers Co.* v. *Badcock and others*, the question regarding assignment of pol. arose in regard to a pol. in the *Hand-in-Hand* Office, which was on a different footing from some of the other F. offices—every pol.-holder being a member; and there was no provision for a simple assignment of the pol. It was therefore held, that in order to recover, the insured must have an interest at the time of ins. and at the time of loss; and as there had been an assignment of the pol. before the loss, the So. was not liable. [The accuracy of this decision has been questioned; and we think that it is questionable—see *Bennett's Fire Ins. Cases*, vol. i. p. 11, note.]

1763.—By 4 Geo. III. c. 14, sec. 10, permission was given to the fire offices, in view of discouraging wilful fires, to apply the ins. money to rebuilding or reinstating the premises burned, as far as the money would go; and this was the origin of that condition now embodied in all fire pol., and which constantly proves of great value in the adjustment of suspected claims.

1767.—In the case of *Drinkwater* v. *Lond. Assu.* Corp., before the Courts this year, the question turned upon the words "usurped power." In the proposals of the Corp. there was an exemption against loss occasioned by a "usurped power." A mob arose at Norwich, and the plaintiff's malting office was burned down by the parties concerned. At the first hearing of the case Mr. Justice Gould was of opinion that the mob, having regard to its object, was a usurped power, and therefore that the Corp. was not liable. Upon a rehearing by the Full Court of Common Pleas, it was *held*, that the mob in this case was not a usurped power; and therefore the Corp. was liable. It had not the words "or civil commotion" in its pol. [CIVIL COMMOTION.]

1780.—The case of *Langdale* v. *Mason and others* arose. This was a case against the *Sun* F. Office, to recover the ins. on a house destroyed during the "Gordon Riots." Here the Co. had inserted in its proposals, as far back as 1727, an exception against liability from losses by "civil commotion"; and these words exempted the Co. on the present occasion. The *Lond. Assu.* Corp. had not embodied these words in its "proposals" in the case of pol. tried in *Drinkwater's* case.

1786.—In the case of *Oldman and another, assignees of Ingram*, v. *Bewicke and others*, the property was insured in the *Sun* F., and on a loss occurring, the office refused payment, pending the production of a certificate from the minister and churchwardens, as required by the Co.'s proposals. A certificate by a reputable inhabitant had been sent in. At the first hearing a verdict for £300 was found for the plaintiff, against £1500 claimed. On rule for new trial, judgment was arrested, pending production of certificate.

1789.—In the case of *Routledge* v. *Burrell* (Manager of the *Sun* F. Office), before the Courts this year, it was held, that a deed-poll [policy], containing an ins. against fire, may refer to conditions in a printed paper, without stamp, seal, or signature; and it may be a part of those conditions that the insured shall procure a certificate of his character, and that the loss has happened without fraud; and it is a valid condition precedent to recovery under the pol. This was a very important decision in regard to the then practice of fire offices.

1794.—By adv. dated 10th July this year, the *Sun* F. Office announced that persons insured for one year or any longer term were, and were always, considered by the managers of the office "as insured for fifteen days beyond the time of the expiration of their pol." See *Salvin and others* v. *James and Langston*, 1805. [F. INS. RENEWALS.]

In the case of *Tarleton and others* v. *Staniforth and others*, in the King's Bench this year (1794), the plaintiffs had paid the *Liverpool* F. Office a half year's prem., and agreed to continue to pay the prem. half-yearly, within fifteen days after the expiration of the former half year. It was a stipulation of the proposals of the Co. that no ins. should take place until the prem. was actually paid. A loss happened during the fifteen days at the end of a half year, and the prem. not having been paid, the Co. was *held* not to be liable, although the prem. had been tendered after the fire and before the expiration of the fifteen days. [DAYS OF GRACE, *Fire.*]

1795.—In *Wood and others, assignees of Lockyer and Bream, bankrupts*, v. *Worsley*, which was an action on a pol. issued by *Phœnix* Fire (No. 2), the proposals of the Co. made it a condition precedent that, before payment of any loss by the Co., the insured should produce a certificate from the minister, churchwardens, and reputable inhabitants; but the minister and churchwardens refused "wrongfully and unjustly" to sign such certificate. On the first trial judgment for plaintiff was given. On arguing rule for new trial, the judges were divided in opinion. On proceedings in error, the right to the certificate by the Co. was upheld.

1797.—In *Mildmay* v. *Folgham* [trustee of *Hand-in-Hand* Fire] it was decided by the Court of Chancery that, according to the conditions of that So., the heir to whom a freehold property insured in the office had descended could not have the benefit of the pol. without assignment.

1805.—The case of *Salvin and others* v. *James and Langston*, Managers of the *Sun* Fire, was before the King's Bench. The point turned upon the days of grace allowed under the adv. of 1794; but in this case the Co., before the expiration of the year of ins., had given notice that it would not continue the risk unless an increased prem. was paid. Within the fifteen days a fire arose; the prem. had not been paid; it was tendered after the fire, but not accepted:—*Held*, that the Co. was not liable. [DAYS OF GRACE, *Fire.*]

Under date 29th Sept. 1805, the *Westminster* F. Office issued a broadside of "Terms and Conditions," which showed that the preceding decisions had been carefully considered, and also that the practice of fire ins. was making marked improvement in regard to precision in its contracts, and a more clear definition of the risk insured against. We shall quote some of the conditions in proof:

12. Any number of buildings, together with the household furniture, goods, stock-in-trade, materials, and things, in different houses or buildings, may be insured in one pol., *provided the sum insured in each building, class, head, and denomination of the articles insured, be kept distinct and separate.*

17. Persons desirous to insure buildings shall deliver in the following particulars, viz. a description of the buildings, where situated, by whom occupied, whether used as dwelling houses, warehouses, manufactories, or workshops, and whether immediately adjoining to such buildings as are described in No. 15 [specially hazardous], or how otherwise.

18. In the ins. of household furniture, goods, and stock-in-trade, the nature of the buildings or place in which the same shall be deposited shall be described (particularly whether immediately adjoining such buildings [special risks] as are mentioned in No. 15), and the *quality* of the articles to be insured stated, so that it may be ascertained under which head or class of ins. the same are to be placed; and it shall also be stated whether any manufactory is carried on upon the premises.

19. If any person shall deliver in a false or incorrect description of the houses or buildings, household furniture, goods, or stock-in-trade to be insured, *so as to procure the ins. at a lower prem. than is herein specified as applicable thereto;* or if any houses or buildings shall contain any kiln, furnace, steam engine, stove or oven, used for the purpose of carrying on any manufactory, *without disclosing the same at the time of effecting such ins.*, and having the circumstances stated in the pol.; every such ins. shall be void to all intents and purposes.

20. Persons applying to insure property with this So., and having already insured the same in any other office, or who, after having insured with this So., shall effect an ins. on the same property elsewhere, or if any such alteration shall be made in the house or building ins., in the trade or bus. carried on, or in the household furniture, goods, or stock-in-trade insured, so as to convert or alter the property insured into another class or head of ins., *notice of all such circumstances must be forthwith given to the So.*, so as to have the same indorsed upon or written in the margin of the pol.; and if any such alteration shall take place in the house or building, trade, bus., household furniture, goods, or stock-in-trade, so as to increase the risque of prem., *such increase of prem. must be immediately paid, otherwise the pol. shall in any of the above cases be void.* Houses or buildings, household furniture, goods and stock-in-trade may, however, be ins. at this office, although the same should already be insured elsewhere, *if the sum at which the same should be so insured, and the name of the office where the ins. shall have been made, shall be stated in or upon the pol. to be taken out at this office;* and persons ins. at this office shall be at liberty to ins. the same property at another office, *provided notice of such other ins. shall, within one calendar month after effecting the same, be given at the office of this So., and a memorandum thereof indorsed upon or written in the margin of the pol., and signed by one of the clerks to this So., but not otherwise;* and if such notice be given, and such memorandum made, this So. will make good to the sufferers such a proportion of any loss or damage sustained as the sum ins. at this office shall bear to the sum ins. elsewhere.

21. Upon the death of any person insured, his or her pol. and int. therein shall be continued to the heirs, devisees, executors or administrators of the deceased, and shall be trans. to the person or persons who shall upon such death become entitled to the property insured; *provided that before any new payment or prem. shall become due upon the pol. of such deceased person, his or her heirs, executors, or administrators, entitled to such pol., shall procure his, her, or their right and title to be indorsed on the pol.*

22. Persons changing their dwelling houses, shops, or warehouses, may preserve the benefit of their pol. in respect to the household furniture and stock-in-trade insured, if the nature and circumstances of the risque ins. against should not be thereby altered; *but in all such cases the ins. shall not be in force until such change of dwelling houses, shops, or warehouses, shall be communicated at this office, and allowed by a memorandum to be made upon the pol. or in the margin thereof, and signed by one of the clerks to this So.*

23. All persons insured, who shall sustain any loss or damage by fire, shall forthwith give notice

thereof to the office of this So. . . . *And if it shall appear that there hath been any fraud or false swearing, or that the fire shall have happened by the procurement or wilful act, means, or contrivance of the insured or claimants*, he, she, or they shall forfeit and lose every right and claim to restitution or payment by virtue of his, her, or their pol. or policies.

24. All losses or damages sustained by fire, where all necessary requisites shall have been complied with, *and all reasonable expenses attending the removal of household furniture, goods, and stock-in-trade, in case of fire*, shall be paid at the end of 60 days after notice of fire shall have been given at this office; *or the directors will cause any building and all household furniture, goods, and stock-in-trade, to be rebuilt, repaired, replaced, or reinstated, within a reasonable time, and will begin to rebuild, repair, replace, or reinstate the same within such 60 days.*

26. *The So. will not be accountable for any loss that may arise from such hay and corn as shall be destroyed or damaged by its own natural heating*, but the loss which may thereby happen to any part of the stock ins. will be paid.

27. Watches, jewels, trinkets, china, glass, medals or other curiosities, paintings, drawings, prints and sculpture, carving, gilding, or history painting on walls, shall not be considered to be included in any ins., or paid for in any loss, unless such respective articles shall be specified in the pol.

28. If more than 10 lbs. weight of gunpowder shall be deposited upon the premises, when any loss by fire happens, such loss shall not be made good by this So.

29. All ins. shall be deemed to have expired at 4 o'clock in the afternoon of the last day of the term for which the pol., whether annual or septennial, shall have been granted; but 15 days shall be allowed to every person insured, to be accounted from the expiration of his or her pol., for the purpose of renewing the same; and in case any loss or damage shall happen by fire, before 4 o'clock in the afternoon of the last of these 15 days, and such pol. shall be renewed during that time, or the prem. paid for the renewal thereof, then such renewal shall take effect from the expiration of the former pol. [prem. ?], so as to cover such loss or damage to the extent insured.

Most of these are supplemental to, or amendments on, those mentioned in the early portion of this art.

1813.—In the case of *Watchorn* v. *Langford* (Director of *Eagle* Ins. Co.) it was *held*, that if a person who is not a linen-draper insures his "stock-in-trade, household furniture, linen, wearing apparel, and plate," by a pol against fire, this will not protect linen-drapery goods subsequently purchased on speculation; and the word "linen" in the pol. must be confined to household linen or linen used by way of apparel. This is the first case of interpretation of conditions of this character which is reported.

1815.—There arose the case of *Bufe* v. *Turner* (Director of *Phœnix* F. Ins. Co.), in which the short facts were as follow:—The plaintiff owned one of several warehouses near to a boatbuilder's shop, which took fire, and after that fire was apparently extinguished, on the same evening, he gave instructions, by an extraordinary conveyance, for insuring the warehouse, then having others *uninsured*, but without apprising the insurers of the neighbouring fire. The fire broke out again (after the instructions were despatched) and consumed the property proposed for ins. and accepted by the office:—*Held*, that though the terms of the ins. did not expressly require the communication, yet the concealment of the fact avoided the pol. This is the first reported *Fire* case in which the question of concealment arose. See CONCEALMENT, *Fire*.

During this year also arose the important case of *Newcastle Fire* Ins. Co. v. *Macmorran* and Co., wherein it was *held*, that it was a first principle in the law of ins. that a *warranty must be strictly complied with, whether it be material or not*; but that a mere representation need not be exactly complied with, unless it be material. This subject will be fully considered under WARRANTIES. See also REPRESENTATIONS. [DESCRIPTION OF PROPERTY INSURED.]

We do not pursue the record of cases which have arisen under the various conditions of fire ins. pols.: they become too numerous; and further, the conditions adopted by the various cos. not being uniform, but having a tendency, from the increasing number of cos. and the consequent competition, to be less so, a decision in regard to the conditions of any one co. did not govern other cos. whose conditions were different; and so it has come to pass that an apparent conflict of law has arisen, and few general principles have been arrived at. On several important points indeed the law may be regarded as settled, and these will be particularly referred to under F. INS., PRACTICE OF.

1820.—By this date the conditions of F. Ins. had again become reduced to a very simple form. The following are taken from the prosp. of the *Sun* F. under date 24th June this year:

Art. 1. Any person desirous of effecting ins. upon buildings or goods must furnish the office or its agents with a particular description thereof, and of the process of manufacture carried on therein; and if there be any omission or misrepresentation in describing the building or goods, or process of manufacture, whereby the same may be charged at a different rate of prem. than they otherwise would be, this office will not be responsible in case of any loss or damage. And if any alteration be made in the state of the buildings or goods, or process of manufacture, after such insurance shall have been effected, then the insured shall give due notice thereof in writing to the office or its agents, or in default of such notice, such ins. shall become void, and no benefit derived therefrom.

2. All pol. shall be signed and sealed by three or more trustees or acting members; and no receipts are to be taken for any prems. of ins. but such as are printed and issued from the office, and witnessed by one of its clerks or agents.

3. Houses, buildings, and goods in trust, and merchandize on commission (except as aforesaid), may be insured, provided the same are declared in the pol. to be in trust, or on commission, but not otherwise.

4. On bespeaking pol., all persons shall pay the prem. to the next quarter-day, and from thence for one year at least, or shall make a deposit for the same, and shall, as long as the managers agree to accept the same, make all future payments annually at the said office within fifteen days after the day limited by their respective pol., upon forfeiture of the benefit thereof.

5. Any number of houses and out-houses, and household goods, printed books, wearing apparel,

plate, prints, jewels, and trinkets in private use, stock-in-trade, goods in trust or on commission, may be insured in one pol.

6. Persons insured in this office shall receive no benefit from their pol., if the same houses, goods, etc., are insured in any other office, unless such ins. and the amount thereof be first specified and allowed, by indorsement on the pol., in which case this office will pay its rateable proportion on any loss or damage.

7. When any person dies, the pol. and int. therein shall continue to the heir, executor, or administrator, respectively, to whom the right of the property insured shall belong, provided, before any new payment be made, such heir, executor, or administrator do procure his or her right to be indorsed on the pol. at the said office, or the prem. to be paid in the name of the said heir, executor, or administrator.

8. Persons changing their habitations or warehouses may preserve the benefit of their pol. if the nature and circumstance of such pol. is not altered; but such ins. will be of no force until such removal or alteration is allowed at the office, by indorsement on the pol.

9. No loss or damage will be paid on fire happening by any invasion, foreign enemy, civil commotion, or any military or usurped power whatever.

10. Persons insured, sustaining any loss or damage by fire, are forthwith to give notice thereof at the office; and as soon as possible afterwards, deliver in as particular an account of their loss or damage as the nature of the case will admit of, and make proof of the same by their oath or affirmation, according to the form practised in the said office, and by their books of account or such other proper vouchers as shall be reasonably required, and procure a certificate under the hands of the minister and church-wardens, and some other respectable inhabitants of the parish or place, not concerned or interested in such loss, importing that they were well acquainted with the character and circumstances of the person or persons insured or claiming; and do know, or verily believe that he, she, or they, really and by misfortune, without any fraud or evil practice, have sustained by such fire the loss or damage, as his, her, or their loss, to the value therein mentioned. And till the affidavit and certificate of such, the insured's loss, shall be made and produced, the loss-money shall not be payable. And if there appear any fraud or false swearing, or that the fire shall have happened by the procurement or wilful act, means, or contrivance of the insured or claimants, he, she, or they shall be excluded from all benefit from their pol. And in case any difference shall arise between the office and the insured, touching any loss or damage, such difference shall be submitted to the judgment and determination of arbitrators indifferently chosen, whose award in writing shall be conclusive and binding on all parties.

There is added an N.B.: "When any loss is settled and adjusted, the insured will receive immediate payment for the same, without any deduction or discount, and will not be liable to any covenants or calls for contributions to make good losses." Again: "To encourage the removal of goods, in cases of fire, this office will allow the reasonable charges attending the same, and make good the sufferers' loss, whether destroyed, lost, or damaged by such removal."

We do not think the simplicity here acquired was any real advantage: it must, we think, be regarded as a reaction from the severity of 1805, and was probably due to the competition of the period.

The precise date at which the conditions of ins. were first printed on the back of the pol. is not readily ascertainable; but we believe it certainly may be fixed within the limit of the first quarter of the present century.

1825.—The prosp. of the *Union* F. Office, under date January this year, contained the following: "N.B.—If more than 10 lbs. weight of gunpowder shall be at any time deposited in the premises insured, then no benefit or advantage in case of loss shall be derived from any such ins." The other F. offices of the period had a similar condition.

1864.—Mr. J. B. Ecclesine, the talented editor of the *Wall Street Underwriter*, pub. *Compendium of the Laws and Decisions relating to Mobs, Riots, Invasions, and Civil Commotions, as affecting F. Ins. Cos. in the U.S.* This was a very valuable pamph., not simply in regard to the immediate question of which it treated, but on account of the many historical facts of interest which it contains.

1867.—The case of *Elliott* v. the Corp. of the *Royal Exchange Assu.* was before the English Courts this year. The point in contention was whether, having regard to the conditions of the pol. of the Corp., the insured could bring an action for the amount of his alleged fire loss, or whether the amount of the loss must be "adjusted" before action could be brought. The majority of the Court took the latter view. It will be seen by reference to condition No. 11 of the pol. now in use by the British fire offices (hereafter given) that this point has been placed on a clear footing.

The State of *Connecticut* passed a law this year enforcing *uniform conditions* by the Fire Ins. Cos. transacting bus. in that State. The clauses to this effect we have already given in our art. CONNECTICUT, INS. LAWS OF THE STATE OF. See 1874.

1870.—As half a century has elapsed since the last set of conditions we have here reviewed was adopted,—during which period the bus. has made most gigantic strides; the F. Ins. of the U.S. being mainly developed during this interval; while the British offices have extended themselves into every portion of the globe where commercial relations exist,—we propose to introduce here the full conditions now attached to Brit. fire pol. (Tariff Offices); and also, for the purposes of comparison and instruction, a full set of the conditions indorsed on a National Board pol. of the U.S.

The following are the conditions in use by the **British Tariff** F. Offices; the few non-tariff offices do not, we believe, materially differ. They have been in use since December, 1870:

1. Any material mis-description of any of the property proposed to be hereby insured, or of any building or place in which property to be so insured is contained, or any mis-statement of, or omission to state, any fact material to be known for estimating the risk, renders this pol. void as to the property affected by such mis-description, mis-statement, or omission respectively.

2. If, after the risk has been undertaken by the Co., anything whereby the risk is increased be done

to property hereby insured, or to, upon, or in, any building hereby insured, or any building or place in which property hereby insured is contained, or if any property hereby insured be removed from the building or place in which it is herein described as being contained, without, in each and every of such cases, the assent or sanction of the Co. signified by indorsement hereon, the ins. as to the property affected thereby ceases to attach.

3. This pol. does not cover property held in trust or on commission, unless expressly described as such; nor china, glass, looking-glasses, jewels, clocks, watches, trinkets, medals, curiosities, manuscripts, Government stamps, prints, paintings, drawings, sculptures, musical, mathematical, or philosophical instruments, patterns, models, or moulds, unless specially mentioned in the pol.; nor deeds, bonds, bills of exchange, promissory notes, money, securities for money, or books of account; nor gunpowder; nor loss or damage by fire to property occasioned by or happening through its own spontaneous fermentation or heating, or by or through invasion, foreign enemy, riot, civil commotion, or military or usurped power; nor loss or damage by explosion, except loss or damage by explosion of gas in a building not forming part of any gas works.

4. This pol. ceases to be in force as to any property hereby insured which shall pass from the insured to any other person otherwise than by will or operation of law, unless notice thereof be given to the Co., and the subsistence of the ins. in favour of such other person be declared by a memorandum indorsed hereon by or on behalf of the Co.

5. On the happening of any loss or damage by fire to any of the property hereby ins., the insured is forthwith to give notice in writing thereof to the Co., and within 15 days at latest to deliver to the Co. a claim for any loss or damage, containing as particular an account as may be reasonably practicable of the several articles or matters damaged or destroyed by fire, with the estimated value of each of them respectively, having regard to their several values at the time of the fire, and in support thereof to give all such vouchers, proofs, and explanations as may be reasonably required, together with, if required, a statutory declaration of the truth of the account; and in default thereof no claim in respect of such loss or damage shall be payable until such notice, account, proofs, and explanations respectively shall have been given and produced, and such statutory declaration, if required, shall have been made.

6. If the claim be in any respect fraudulent, or if any statement or statutory declaration made in support thereof be false, or if the fire was occasioned by or through the wilful act, procurement, or connivance of the insured or any claimant, all benefit under this pol. is forfeited.

7. The Co. may, if it think fit, reinstate or replace property damaged or destroyed, instead of paying the amount of the loss or damage, and may join with any other Co. or insurers in so doing in cases where the property is also insured elsewhere.

8. On the happening of any loss or damage by fire to any property in respect of which a claim is, or may be, made under this pol., the Co., without being deemed a wrong-doer, may, by its authorized officer and servants, enter into the building or place in which such loss or damage has happened, and for a reasonable time remain in possession thereof and of any property hereby insured which is contained therein, for all reasonable purposes relating to, or in connexion with, the ins. hereby effected thereon, and this pol. shall be evidence of leave and license for that purpose.

9. If, at the time of any loss or damage by fire happening to any property hereby insured, there be any other subsisting ins. or insurances, whether effected by the insured or by any other person, covering the same property, this Co. shall not be liable to pay or contribute more than its rateable proportion of such loss or damage.

10. In all cases where any other subsisting ins. or insurances, whether effected by the insured or by any other person, covering any property hereby insured, either exclusively or together with any other property in and subject to the same risk only, shall be subject to the conditions of average, the ins. on such property under this pol. shall be subject to the conditions of average in like manner.

11. Where the Co. does not claim to avoid its liability under the pol. on the ground of fraud or non-fulfilment of any of the conditions hereinbefore set forth, but a difference at any time arises between the Co. and the insured or any claimant under this pol. as to the amount payable in respect of any alleged loss or damage by fire, every such difference, when and as the same arises, shall be referred to the arbitration of some person to be chosen by both parties, or of two indifferent persons, one to be chosen by the party claiming and the other by the managers of the Co., and in case either party shall refuse or neglect to appoint an arbitrator within 28 days after notice, the other party shall appoint both arbitrators, and in case of disagreement between the arbitrators, then of an umpire, who shall have been chosen by the arbitrators before entering on the reference, and in the case of the death of the arbitrators, or of one of them, or of the said umpire, another or others shall be appointed in his or their stead; each party to pay his or their own costs of the reference, and a moiety of the costs of the award; and the reference in all other respects shall be subject to such rules and conditions as are usually inserted in orders for reference at *Nisi Prius* if the parties differ about the same, and the award of the arbitrators or umpire, as the case may be, shall be finally binding upon all parties, and shall be conclusive evidence of the amount payable in respect of the said loss or damage. And it is hereby expressly declared to be a condition of the making of this pol., and part of the contract between the Co. and the insured, that where the Co. does not claim to avoid its liability under the pol. on the ground of fraud or non-fulfilment, as aforesaid, the party insured or claimant shall not be entitled to commence or maintain any action at law or suit in equity on this pol. till the amount due to the insured shall have been awarded as hereinbefore provided, and then only for the sum so awarded, and the obtaining of such award shall be a condition precedent to the commencement of any action or suit upon the pol.

12. In all cases where this pol. is void, or has ceased to be in force, under any of the foregoing conditions, all moneys paid to the Co. in respect thereof will be forfeited.

Regarding No. 10, the conditions of average there referred to have been given in our art. AVERAGE POLICIES. No. 11 may be regarded as a variable clause, being modified by the D. of Sett. or Special Acts of some of the cos.; but its purport is usually the same. In the pol. issued in *Ireland*, clause 3 has an add. to the exceptions by the use of the words "or the act of an incendiary" after "usurped power." [IRISH INSURANCES, *Fire.*]

The following are the conditions of the pol. of the **National Board** Offices in the U.S., first framed in 1867. These constitute (with perhaps some few exceptions) the leading offices of the country. There are some of the mut. contribution asso. to which the conditions prob. would not fully apply. The British and other foreign offices carrying on F. bus. in the U.S. adopt the same conditions there. We believe this set of conditions does not embody the very latest alterations; but the chief features remain the same:

Provided always, and it is hereby declared, that this Co. shall not be liable to make good any loss or damage by fire which may happen by means of any invasion, insurrection, riot, or civil commotion, or of any military or usurped power, or any loss *by theft at or after a fire*, or for loss on or damage to stock, or goods of any kind, which shall or may happen to the same while undergoing any process in or by which the application of fire-heat is necessary. And provided further, that if any other ins. has been or shall hereafter be made upon the said property and not consented to by this Co. in writing hereon, or if the said property shall be sold or conveyed, or the interest of the parties therein changed, or if this pol. shall be assigned without the consent of the Co. obtained in writing herein, or if the assured shall make any attempt to defraud the Co., then, and in every such case, this pol. shall be null and void. *The commencement of foreclosure proceedings upon, or a sale under a trust deed of, or the existence of a judgment lien upon, or the issue or levy of an execution without actual possession against, any kind of property hereby ins., shall render this pol. null and void.* In case of loss, the insured shall not be entitled to demand or recover on this pol. any greater proportion of loss or damage sustained to the subject insured than the amount hereby insured shall bear to the whole amount insured (whether the same shall be valid or not) on the said property. And it is agreed, and declared to be the true intent and meaning of the parties hereto, that in case the above mentioned premises are, at any time during the period for which this pol. would otherwise continue in force, used for more hazardous purposes than that called for in the original contract of ins., or if the same be or become vacant and unoccupied or the hazard otherwise increased, or if it be a manufacturing estab., running in whole or in part over or extra time, or running at night, without special ageement indorsed on this pol., this pol. shall be of no force or effect. And it is moreover agreed and declared that this insurance is not intended to apply to or cover any books of account, written securities, deeds, or other evidences of title to property; nor to bonds, bills, notes, or other evidences of debt; nor to money or bullion; and that casts, curiosities, engravings, jewelry, jewels, medals, models, musical and scientific instruments (pianofortes in dwelling houses excepted), paintings, patterns, plates, precious stones, printed music, prints, sculpture, statuary, and watches are not deemed to be included in any ins., unless particularly specified in writing in the pol. In case of loss, not more than fifty dollars will be allowed on any one picture or print unless a valued catalogue shall have been previously deposited in the office.

1. If an application, survey, plan or description of the property herein insured is referred to in this pol., such application, survey, plan or description shall be considered a part of this contract, and a warranty by the assured.

2. If any person effecting insurance in this Co. shall make any misrepresentation or concealment touching the risk to be assumed, or if, during the existence of this pol., or any renewal thereof, the risk shall be increased by any means beyond that existing at the time the pol. was issued, or by the occupation of the premises for more *hazardous* purposes than are permitted by this pol., or if the insured, at or before the taking of any renewal, shall fail to notify the Co. of any increase of the hazard, whether within or without the premises, and have the same indorsed hereon, this pol. shall be void. Every renewal shall be deemed to be made upon the faith of the representation on which the original pol. was granted, unless superseded by a new description of the risk.

3. *If a building shall fall, except as the result of a fire, all ins. by this Co. on it or its contents shall immediately cease and determine.*

4. *This ins. may be terminated at any time, at the request of the insured, in which case the Co. may retain the customary short rates for the time the pol. has been in force. The ins. may also be at any time terminated at the option of the Co., on giving notice to that effect and by paying a rateable proportion of the prem. for the unexpired term of the pol. on demand.*

5. If the interest of the assured in the property be any other than the entire, unconditional and sole ownership of the property, for the use and benefit of the assured, *or if the building insured stands on leased ground*, it must be so represented to the Co., and so expressed in the written part of this pol., otherwise the pol. shall be void. When property has been sold and delivered, or otherwise disposed of, so that all interest or liability on the part of the assured herein named has ceased, this ins. on such property shall immediately terminate.

The clause "held in trust or on commission, or sold but not delivered," covers only the property of the assured, or property in which the assured has an interest for commissions, or other charges (and if for commissions, advances, or other charges, only to the extent of the same), or property held for others which the assured has agreed in writing to protect by ins., and is responsible for, or property that has been duly entered upon the book or books of the assured, in the name of a purchaser, and not delivered. The use of general terms, or anything less than a distinct, specific agreement, clearly expressed and indorsed on this pol., shall not be construed as a waiver of any printed or written condition or restriction therein.

Goods held on storage must be separately and specifically insured.

6. No ins., *whether original or continued*, shall be considered as binding *until the actual payment of the prem.* It is a part of this contract that any person, other than the assured, who may have procured this ins. to be taken by this Co., shall be deemed to be the agent of the assured named in this pol., and not of this Co., under any circumstances whatever, or in any transaction relating to this insurance, excepting such persons as hold an agency of the Co. by written appointment and commission.

7. *Re-insurances for any other Ins. Co. to be on the basis of joint liability with said Co.; and in the event of loss the Co. to pay* pro rata *at and in the same time and manner as the Co. re-insured. If claim shall be made against this Co. by a mortgagee holding this pol. as collateral security, and this Co. shall pay the same and claim that as to the mortgagor or owner no liability existed, this Co. shall at once be legally subrogated to all the rights of the mortgagee under all the securities held as collateral to the mortgage debt, to the extent of such payment, or, at its option, may pay the mortgagee the whole principal due or to become due on the mortgage, with interest, and shall receive therefor a full assignment and transfer of the same, and all other securities held as collateral to the mortgage debt.*

And whenever this Co. shall pay any loss, the assured agrees to sign over all his rights to recover satisfaction therefor from any person or persons, town or other corporation, or to prosecute therefor at the charge and for the action of the Co. if requested.

8. If at the happening of any fire the insured shall have insurance under a *floating* pol. or pol., not specific, but covering goods generally, in various places not designated, and yet within limits which include the premises or property herein insured, such pol., as between the insured and this Co., shall be considered as co-insurance with this pol., anything in the floating pol. to the contrary notwithstanding.

9. *In case of claim for loss or damage on a pol. assigned where there is no actual sale or transfer of the property insured, proofs of loss shall be made by the insured, in conformity with the conditions of this pol., in the same manner as if no assignment had been made; otherwise this pol. shall be void and of no force or effect whatever, and all liability on the part of this Co. shall cease.*

10. *It is mutually understood that there can be no abandonment to the insurers of the subject insured in case of loss or damage by fire.*

11. Persons sustaining loss or damage by fire shall forthwith give notice thereof in writing to the Co., or its agent, and as soon after as possible, they shall deliver as particular an account of their loss and damage as the nature of the case will admit, signed with their own hands; and they shall accompany the same with their oath or affirmation, declaring the said account to be true and just; showing also the ownership of the property insured; what other ins., if any, existed on the same

property, and give a copy of the written portion of the pol. of each co.; what was the whole cash value of the subject insured; what was their interest therein; in what general manner (as to trade, manufactory, merchandize, or otherwise) the building insured or containing the subject insured, and the several parts thereof, were occupied at the time of the loss, and who were the occupants of such building; and when and how the fire originated, so far as they know or believe; they shall also produce a certificate, under the hand and seal of a magistrate, notary public, or commissioner of deeds, most contiguous to the place of the fire, and not concerned in the loss as a creditor or otherwise, or related to the insured or sufferers, stating that he has examined the circumstances attending the fire, loss, or damage alleged; that he is acquainted with the character and circumstances of the insured or claimants, and that he verily believes that he, she, or they have, by misfortune, and without fraud or evil practice, sustained loss and damage on the subject insured to the amount which such magistrate, notary public, or commissioner of deeds shall certify. The assured shall, if required, submit to an examination or examinations, under oath, by any person appointed by the Co., and subscribe to such examination when reduced to writing.

When merchandize or other personal property is partially damaged, the insured shall forthwith cause the same to be put in as good order as the nature of the case will admit, assorting and arranging the various articles according to their kind, separating the damaged from the undamaged, and shall cause a list or inventory to be made and furnished to the Co. of the whole, naming the quantity and cost of each. In case differences shall arise concerning the amount of loss, the amount of sound value and of damage shall then be ascertained by the examination and appraisal of each article by disinterested appraisers, mutually agreed upon; one-half of the appraisers' fees to be paid by the insurers; and the assured shall, if required, submit to an examination, under oath, by the agent or attorney of the Co., and answer all questions touching his, her, or their knowledge of anything relating to such loss or damage, or to their claim thereupon, and subscribe to such examination, the same being reduced to writing; and, whenever required in writing, the insured or persons claiming shall produce and exhibit his books of account and other vouchers to the insurers or their agents, at the office of this Co., in support of his claim, and permit extracts and copies thereof to be made; and shall also produce certified copies of any bills or invoices of property destroyed or damaged, the originals of which may have been lost, mislaid, or destroyed; and shall also exhibit to any persons named by the Co., and shall permit to be examined by them, any property damaged on which any loss is claimed, or any property saved which was insured by this pol.; and until such proofs, declarations, and certificates are produced, and such appraisals and examinations of property permitted by the claimant, the loss shall not be payable.

All fraud or attempt at fraud by false swearing or otherwise shall cause a forfeiture of all claim on this Co. under this pol.

12. In case of any loss or damage to the property insured, it shall be optional with the Co. to replace the articles lost or damaged with others of the same kind and quality, or to take the goods at their appraised value, or to rebuild or repair the building or buildings, within a reasonable time, giving notice of their intention so to do within thirty days after having received the preliminary proofs of loss required by the eleventh article of these conditions; and the assured shall, if required, furnish plans and specifications of the building or other property destroyed. In case differences shall arise concerning the amount of any loss or damage by fire, the matter shall, at the written request of either party, be submitted to the judgment of arbitrators, indifferently chosen, whose award in writing, as to the amount of such loss and damage, shall be binding on the parties; but such award shall not determine any question as to the *liability* of this Co. under this pol.

The cash value of property destroyed or damaged by fire shall in no case exceed what would be the cost to the assured at the time of the fire of replacing the same; and in case of the depreciation of such property, from use or otherwise, a suitable deduction from the cash cost of replacing shall be made, to ascertain the actual cash value.

13. *This Co. will not be answerable for any loss arising from the use of fires in buildings unprovided with a good and substantial stone or brick chimney, or in consequence of neglect or of deviation from the laws or regulations of police made to prevent accidents from fire, in places where laws and regulations on this subject exist.*

14. It is furthermore hereby expressly provided that no suit or action of any kind against said Co., for the recovery of any claim upon, under or by virtue of this pol., shall be sustainable in any court of law or chancery unless such suit or action shall be commenced within the term of twelve months next after such loss or damage shall occur; and in case any such suit or action shall be commenced against said Co. after the expiration of twelve months next after such loss or damage shall have occurred, the lapse of time shall be taken and deemed as conclusive evidence against the validity of the claim thereby so attempted to be enforced.

☞ Petroleum, rock, earth, coal, kerosene or carbon oils of any description, whether crude or refined, benzine, benzole, naphtha, camphene, spirit gas, burning fluid, turpentine, phosgene, or any other inflammable liquid, are not to be stored, used, kept, or allowed on the above premises, temporarily or permanently, for sale or otherwise, unless with written permission indorsed on this pol., excepting the use of refined coal, kerosene, or other carbon oil for lights, if the same is drawn and the lamps filled by daylight. Otherwise this pol. shall be null and void.

☞ Gunpowder, or any other article subject to legal restrictions, it is understood and agreed, are subject to the same restrictions, prohibitions, limitations, and conditions under this pol. as the articles mentioned in the section next preceding this.

☞ Fences, privies, and other yard fixtures, also store furniture and fixtures, must be separately and specifically insured, otherwise they are not protected by this pol.

☞ *If any property covered by this ins. be damaged by lightning, or the bursting of a boiler, or by explosion from any cause, this Co. shall not be liable therefor unless fire ensues, and then for the loss by fire only, which shall be determined by the value of the damaged property after the casualty by explosion or lightning.*

☞ Gas.—The generating or evaporating in the building or contiguous thereto, of any substance for a burning gas, or the uses of gasoline for lighting, is prohibited under this pol., unless permitted in writing hereon.

☞ Carpenters' or Builders' Risks.—When buildings insured by this Co. are being altered or repaired, or when mechanics are working therein, or if the buildings contain property insured by this Co., notice thereof must be given to the Co., and consent thereto indorsed on the pol.

☞ *Dry goods in windows where lights are used are not covered by this pol., unless a specific amount is stated to apply thereto.*

☞ Plate-glass doors or windows, when the plates are of the dimensions of three square feet or more, are subject to an extra prem., and must be separately and specifically insured, otherwise they are not covered by this pol.

It is seen that many of these conditions are very stringent, although not more so than the nature of the bus. and the circumstances of the country require. We have put in italics those conditions which appear to embody points of practice differing from the

British Cos. While the conditions are embodied on the face of the pol., it is still made a distinct agreement between the insured and the co. "that this pol. is made and accepted in reference to the foregoing terms and conditions, and to the classes of hazards and memoranda printed on the back, which are hereby declared to be a part of this contract." The *average clause* is a usual condition in all U. S. fire pol.

1874.—Towards the close of this year the Legislature of Ontario, Canada, passed the second reading of an Ins. Bill, containing (*inter alia*) the following clause:

> 2. Any condition indorsed upon and affecting a pol. of fire ins. hereafter entered into, which the Court or Judge before whom a question relating thereto is tried holds not to be just and reasonable, shall be null and void.

This looks like amateur legislation. If the "Court or Judge" be not practically familiar with fire ins., how can any judgment arrived at on such a matter be expected to be correct? At a later date a modification has been introduced. It is proposed to appoint three commissioners to determine whether the conditions of fire pol. "are just." [Alteration in Premises.] [Assignment of Ins. Pol.] [Civil Commotion.] [Claims, Adjustment of.] [Concealment.] [Construction of Ins. Contracts.] [Damages, Measure of.] [Dangerous Trades.] [Days of Grace.] [Description of Property.] [Evidence.] [Fraud.] [Insurable Int.] [Invasion.] [Loss, Notice of.] [Loss, Proof of.] [Material Facts.] [Misrepresentation.] [Prem., Payment of.] [Salvage.] [Reinstatement.] [Warfare.] [Warranty.]

FIRE Ins., Contract of.—It would be alike interesting and instructive to take up the original contract of F. Ins., as it presented itself to the mind of the first proposer, and to watch its gradual progress from that necessarily crude outline until it has become developed into a form of almost scientific precision, every phrase employed having a well-considered and usually a well-understood meaning. It is not possible to do this, for the simple reason that the offices have not preserved either copies of their "proposals" (*i.e.* early prospectuses) or copies of their pol. as in use during the various periods of their history. It seems remarkable that so little interest should be taken in matters of daily concern; but the real solution is that few men regard with interest an occupation which brings upon them a constant routine of toil and responsibility. Would not this very interest, the absence of which we deplore, bring relief to the mind? We need not reason upon the point. It is the *past* with which we have to do, and no present resolves can repair the omissions of that past! The records have not been kept. Even where they had been attempted, fire and other casualties have sided to defeat human forethought. It is for us to repair the evil as best we may.

The processes at our command are not many—although more than at first sight may appear. They consist of (1) such documents as have been promulgated by the offices themselves, as "proposals" (the early forms of prospectus), agents' instruction-books, and especially advertisements; (2) such documents as the law required them to inroll, as D. of Sett., and alterations thereof; (3) notices of the asso. in newspapers, pamphlets, and other contemporary history; (4) works of authors on the especial subject (5); proceedings in the law courts on points arising out of these very contracts. These last, as far as they go, are of the very greatest value.

In *Marine* Ins. the development of the contract is more easy to trace. Most of the maritime nations had codes or ordinances upon the subject, which have been preserved. Besides, the principle of Average had become estab., as necessary to the adjustment of the interests of the several parties concerned in the ship and cargo, long before ins. was contemplated. Upon this estab. principle of average the contract of marine ins. engrafted itself. And finally, the conditions of marine ins. are practically *uniform*. What is usually known as "Lloyds Pol." is in effect the only pol. in force in the U. K. Hence a decision upon any point in the pol. has at once operated on the practice of all concerned in the bus. In the light of the recorded cases, then, the contract of marine ins. may be read.

In regard to *Life* Ins., too, the materials are more abundant. The contracts are less ephemeral than those of fire ins., and the points involved have engaged the attention of a far greater number of writers; so that means at command are in every way more complete.

The means by which we hope to develope the contract of fire ins. will be found ranged under several distinct heads, viz. Fire Ins., Classification of Risks; Fire Ins., Conditions of; Fire Ins., History of; Fire Ins. Losses, Adjustment of; Fire Ins., Pol. of; Fire Ins., Practice of; Ins. Asso., Legal Constitution of. Out of the materials brought together under these several heads the contract of F. Ins. is to be eliminated, as far as elimination be possible, under the circumstances already referred to.

Speaking in a legal sense, the contract of F. Ins. is a *Contract of Indemnity*, and therefore resembles that of marine ins., while it differs altogether from that of life ins. "Fire Ins. (says Mr. Bunyon) is a contract wherein one party undertakes to pay or make good to the other any loss or damage by fire which may happen during a particular period to specified property, not exceeding the sum named as the limit of ins., or of each item thereof, in consideration of an immediate fixed payment."

Mr Bunyon further remarks in his *Law of Fire Ins.*:

> In the consideration of our present subject it will be always important to remember that F. Ins. is the offspring of Marine Ins., and that the same general principles govern both branches of the law. The reported decisions are far less numerous in the former than in the latter and elder branch, and except so far as any particular case may be determined by the express contract of the parties, or any circumstances necessarily foreign to the latter system, the solution of any question that may arise upon an ins. against fire will generally be found by a careful application to it of the doctrines of marine ins. To master these should, then, be the first object of the student; and, noting the points of difference in the two contracts, and the express decisions of the Courts upon our subject, he will deduce from them the law of F. Ins. also. (p. 4.)

The form of the contract is that of a pol. of ins., wherein the insurer, in consideration of an ann. prem. paid by the insured, gives the latter the indemnity stated; and this was about all that the early contract expressed. But ins., in other forms, had been practised for ages before the contract of F. Ins. came into use: and hence certain principles became associated with the contract, and shed their light upon its interpretation, without being in words embodied therein. These were, more particularly: 1. That no concealment must be practised by the insured towards the insurer in respect of the description of the property insured, and of the hazards to which it was exposed. 2. That, being a contract of indemnity, proof must in all cases of claims be rendered of actual loss or damage to the amount claimed. An exception indeed arose in this last respect to the extent to which the vicious system of "valued pol." ever became applied to F. Ins.

In view of avoiding misunderstanding and consequent disputes, it soon became apparent that it was desirable to define the conditions of the contract, and to affect the holder of the pol. with notice thereof. This was accomplished, not by embodying them in the contract itself, but by adding them to the prosp.—then called the "proposals"—of the Co., a copy of which formed the wrapper or envelope for every pol. issued; while the pol. itself stated that it was issued subject to the proposals of the Co., usually naming the specific data of the proposals to which it referred.

Practical experience could alone determine the conditions of detail: they therefore developed with the growth of the bus. The questions which from time to time came before the Law Courts, tended to the elucidation and permanent interpretation of these conditions. Many of these conditions, indeed most of them, now have a long string of legal decisions at their back. Some of these we have already reviewed in detail, as—Alteration in Premises; Assignment of Ins. Pol.; Civil Commotion; Concealment; Dangerous Trades; Days of Grace; Description of Property; Exceptional Risks; while we shall hereafter have to speak of others, as—Insurable Interest; Misrepresentation; Prem., Payment of; Reinstatement; Warranty. But the crowning protection to the contract is the enforcement of the principle that *fraud* defeats and violates all claim. But for this circumstance it would long since have become impossible to conduct the bus. upon the small basis of prem. which has usually prevailed in this country.

The *Royal Exchange* Ins. Corp. settled and pub. its scheme for F. Ins. during the year 1722. In this, great progress was made towards enlarging the scope of the bus., and at the same time defining the nature of the contract of F. Ins. Its "proposals" will be given entire in our art. Fire Ins., Hist. of, under this date.

In order to an understanding of the full import of the early decisions by our Courts under the contract of F. Ins., it is essential to bear in mind the fact that while we usually speak of any given *property* as being insured, in point of fact what *is insured* is the interest of some particular person, viz. the insured, in such property. This was forcibly pointed out by Lord Chancellor Hardwicke in the early case (1743) of *The Saddlers' Co.* v. *Badcock and others* (trustees of the *Hand-in-Hand*): "To whom, or for what loss are they to make satisfaction? Why, to the person insured, and for the loss he may have sustained; for it cannot properly be called insuring *the thing, for there is no possibility of doing it;* and therefore must mean insuring the person from damage."

Whether the contract of Fire Ins. was ever made verbally in this country, as the contract of *Marine Ins.* undoubtedly was, until the *Policies of Ins. Court* was estab. in the reign of Elizabeth (1574) [Chambers of Ins.], for the purpose of registering the contracts between the parties—and as they were in France—does not appear. At first sight it might appear that they were, and that the Act of which we next have to speak was passed to remedy such infirmity. But on the other hand, after the necessity for registration which had been shown in regard to Marine Ins. contracts, it is hardly likely that a century later verbal contracts would have been resorted to for another branch of bus. What does appear as probable is, that contracts of ins. had been entered into in various forms of writing, and that the necessities of the Exchequer caused these all to be brought together under one designation of *pol. of ins.*

The Act referred to is the 10th Anne, c. 26 (1711), the 68th sec. of which provides:

> All deeds, instruments and writings for the payment of any sum of money upon the loss of any ship or goods, *or upon the loss by fire*, or for any other purpose for which any writing, commonly called a pol. of assu. or ins., is or hath been usually made, shall be construed, deemed and adjudged to be pol. of assu. within this Act, *and to be charged with the duty last mentioned* [viz. 2s. 4d. for every pol. *over and above all duties previously chargeable upon the same*].

Contracts of Fire Ins. are not unfrequently negociated verbally; but the contract when prepared is usually held to embody the agreement actually arrived at. In certain cases *parol* evidence may be called, in view of interpreting the contract. [CONSTRUCTION OF INS. CONTRACTS.] [PAROL EVIDENCE.]

It was held in the New York courts in 1863, in the case *Baptist Church* v. *Brooklyn Fire* Ins. Co., that to constitute a valid contract of ins. the minds of the parties must meet as to the premises and the risk; as to the amount insured; as to the time the risk shall continue; and as to the prem.

The form of the contract, *i.e.* the pol., in its legal aspect, is that of a "deed-poll," instead of an "indenture," the usual form of a contract made between two or more parties. A deed-poll is executed by one of the parties only; but it becomes binding on the other party by reason of his acceptance of it, and payment of the prem. or other consideration under it. Hence the pol., after its unconditional acceptance by the insured, becomes binding on both parties; provided only entire good faith has been observed in the negociation of the contract, and that in the carrying out of its provisions no fraud be attempted.

There are many other points of practice arising out of the consideration of the contract of Fire Ins., as when the contract becomes completed, when it terminates, and under what circumstance, apart from the acts or control of the parties, its conditions may be varied. These will be found discussed under the heads of COMMENCEMENT OF INS. RISKS; COMPLETION OF THE CONTRACT; DELIVERY OF THE POL.; PREM., PAYMENT OF; TERMINATION OF RISK; WARFARE, ITS INFLUENCE UPON INS. CONTRACTS; etc.

In *France* the contract of ins. is held to be one of *reciprocal obligations*. The insurer guarantees indemnity to the insured, and the insured in turn binds himself to pay to the insurer the prem. agreed upon, *mostly for a term of years*. Hence, in order to conform to this principle, the *Code de Commerce* requires all pol. to be signed by both parties; and until so signed they are not valid.

In *Germany* the reciprocity of the contract is recognized and assented to by a special stipulation as follows: "The acceptance of the pol. and the renewal receipts by the insured *shall constitute his assent* to the prem., and to the duration of the ins."

In the city of *Hamburg* a form of F. pol. is in use which embodies what is known as the "three-fourths plan." The pol. provides "that in case of loss by fire happening in the premises occupied by or within the control of the assured, this Co. will only be liable and bound to pay three-fourths of the amount of loss so ascertained and proved." Of this we shall speak more in detail under HAMBURG, sub-heading *Fire Ins.* There can be no doubt of the importance of the principle involved in every person insured bearing a portion of his own risk in the case of fire.

In the U.S. the contract of F. Ins., originally based on our own, has been interpreted very strictly. It is held by the Courts there to be in the nature of a *bond of indemnity*, or a guaranty against loss not wilful, from a specific peril, to a given amount, upon certain subjects, and for a specified period of time; or, in other words, that the underwriters will pay for as much of the property covered by the contract as may be lost or damaged by the peril insured against; the consideration therefor being the prem. paid by the insured. In the greater proportion of the States there is no law requiring the contract of ins. to be in writing; but the invariable *custom* is that it shall be so. In the States of Louisiana, Georgia, and Ohio, the law requires the contract to be in writing. —*Vide* Griswold.

It may be useful to state that the contract of F. Ins. need not necessarily take the form of a pol. For instance, where one person has, for the purposes of trade or otherwise, possession of the goods of another, under a guarantee that he will hold them indemnified against fire, and they become destroyed by fire, the owner may recover in an action of damages: the measure of the damages being the value of the goods destroyed—*Ex parte* Bateman, 1856. [CONTRACT OF INS.] [FIRE INS. POLICIES.] [RE-INSURANCE.]

FIRE INS., DAYS OF GRACE IN.—The period allowed for the renewal of fire ins. pol. in Gt. Brit. is 14 days. This is the custom, but special contracts override custom, and have therefore to be regarded where they exist. The whole question has been considered under DAYS OF GRACE, sub-heading *Fire*. It may be useful to add that in what are known as Mercantile Ins. there are no days of grace; and that in the U.S. days of grace are only recognized where there is a clear intention to renew the pol.

FIRE INS. DIVIDENDS.—Under FIRE INS., FINANCE OF, this subject will be considered in several aspects.

FIRE INS., (PER-CENTAGE) DUTY ON.—The per-centage duty on Fire Ins.—that is, upon sums insured, annually or otherwise, under F. pol.—was quite a distinct thing from the stamps on F. Ins. pol. Stamps upon pol. of ins. were first imposed in the reign of William & Mary, 1694, and were increased or decreased according to the requirements of the National Exchequer, or according to the caprice of various finance ministers. [FIRE INS. POL., STAMP DUTY ON.] Onerous as appeared these stamps on pol., they weremild compared with the per-centage duty, first imposed by the ministry of Lord North, in 1782. We are not going to discuss the policy or the impolicy of this impost here; that has been sufficiently discussed already. Happily the tax is a thing entirely of the past; and in this light we are going to regard it—purely historically. The only redeeming feature in regard to the tax in our view is, that it was the means of drawing together a mass of statistical information, which may be made the means of throwing much light upon the history of F. Ins.; and to this end we shall arrange the data which follow.

Chronological T. of Enactments relating to the Imposition, Collection, Variations in, and Final Reduction and Abolishment of, the Per-centage Duty on F. Ins.

1782.—By 22 Geo. III. c. 48, an *annual* duty of 1*s*. 6*d*. p. £100 insured was imposed, to take effect from 24 June, on all ins. effected in Gt. Brit., *except on public hospitals.*

1786.—By 26 Geo. III. c. 82 (sec. 9), all *foreign property*—situate in countries at peace with Gt. Brit., but ins. in Gt. Brit.—*was exempted* from duty, after 5 July.

1794.—By 34 Geo. III. c. 3 (Irish Statutes), a duty of 1*s*. p. £100 insured was imposed upon fire ins. effected in *Ireland.*

1797.—By 37 Geo. III. c. 90, 6*d*. add. duty p. £100 insured from 5 July, making 2*s*. [A reduced scale of stamp duties on fire pol. was at the same time enacted.]

1804.—By 44 Geo. III. c. 98, all former duties were repealed, as from 10 October, and a new duty of 2*s*. 6*d*. p. £100 insured was imposed. This Act extended to *Ireland.*

1810.—By 50 Geo. III. c. 35 (sec. 1 to 10 inclusive), all duties on *Colonial Fire Ins.* under former Acts, were abolished, as from 24 May; and instead, stamp duties of 2*s*. 6*d*. p. £100 ins. and 1*s*. on the pol. were imposed, as from same date.

1815.—By 55 Geo. III. c. 101 (sec. 14 to 27 inclusive), regulations were made for collection of duty in *Ireland.*

1815.—By 55 Geo. III. c. 184 (sec. 32 to 36 inclusive), the former duty was repealed, and a new duty of 3*s*. p. £100 was imposed, to take effect from 28 September.

By same Act, the duty on *Colonial Ins.* was increased to 5*s*. p. £100. *Hospitals, and property in any foreign kingdom or state at amity with His Majesty, his heirs and successors, exempt.*

Allowance made for collection of duty, viz.: to offices in London and Westminster 4 p.c. on per-centage duty collected at head office, and 5 p.c. on that collected by provincial agents; to country offices 5 p.c.

1816.—By 56 Geo. III. c. 56, the per-centage duty on ins. in *Ireland* was fixed at 2*s*. 6*d*. p. £100 insured.

1828.—By 9 Geo. IV. c. 13, insurances with "average clause" were permitted; but detached buildings and their contents were to be insured separately, as from 5 July.

1833.—By 3 & 4 Wm. IV. c. 23 (sec. 6), *Agricultural Insurances* were exempted from all duties, as from 24 June.

1838.—By 1 & 2 Vict. c. 56 (sec. 96), ins. on *Workhouses* effected in pursuance of order of the Poor Law Commissioners in Ireland exempted from duty.

1842.—By 5 & 6 Vict. c. 79 (sec. 20), it is provided that the licences to ins. offices and agents for collection of duty in Gt. Brit. need not be ann. renewable as theretofore, but should continue in force so long as the office or person continued to act, and should make no default in payment of duty.

1850.—By 13 & 14 Vict. c. 97 (sec. 19), similar provisions are extended to Ireland.

1856.—By 19 & 20 Vict. c. 22, duties were charged upon ins. of English property made in *Foreign Ins. Offices* as if made at home. Re-insurances exempted from duty, the duty having been paid on original ins.

1860.—By 23 & 24 Vict. c. 111 (Stamp Act), workmen's tools up to a value not exceeding £20 are exempted from duty; but there must be a separate pol. or distinct sum named.

1864.—By 27 & 28 Vict. c. 18 (sec. 9 and 10), the duty on ins. on stock-in-trade was reduced to 1*s*. 6*d*. from 25th June, such property to be distinguished in policy.

1865.—By 28 & 29 Vict. c. 30, the per-centage duty on *all* fire ins. from and after 25th June was reduced to 1*s*. 6*d*. [Stamp on pol. reduced to 1*d*.]

1869.—By 32 & 33 Vict. c. 14 (sec. 12 and 13 and Schedule C.), the per-centage duty on fire ins. was *entirely abolished*, as from the 25th June. This Act also repealed such of the preceding Acts as then remained unrepealed.

The special circumstances which led to the passing of many of the preceding measures will be found set out under title FIRE INS., HIST. OF, in some detail. Some of the measures are also referred to in this present art.

1805.—The first detailed return of the duty collected by the individual fire offices, Lond. and Provincial, which we have been able to obtain, after a long-continued research, is that for 1805, or in other words for the financial year ending 5 Jan. 1806. This return —obtained by Sir F. M. Eden—is full of interest. It not only shows the amount of duty collected by each office [the rate was then 2*s*. 6*d*. per £100 insured], and the relative bus. positions of the several offices, but it furnishes ***an entire list of the fire offices then existing:*** a matter of no small interest:

London Offices.

	£	*s.*	*d.*		£	*s.*	*d.*
1. Sun	92,845	3	11	8. Hand-in-Hand	12,120	11	3
2. Phœnix	59,162	3	10	9. London Assurance	6,210	3	5
3. Royal Exchange	44,095	13	3	10. Union	4,783	3	1
4. Imperial	23,141	5	11	11. Albion (part of year)	3,568	4	7
5. British	18,744	2	6				
6. Globe	17,248	10	2	Total	£294,196	15	2
7. Westminster	12,277	13	3				

Country Offices—exclusive of Scotland and Ireland.

		£	s.	d.			£	s.	d.
1.	Kent	4752	8	2	10.	Hants, Sussex, and Dorset (Winchester)	1312	18	2½
2.	Newcastle-upon-Tyne	3759	5	9	11.	Bristol Crown	1257	19	10
3.	Bristol Town	3320	18	4	12.	Bath Sun	1137	1	0
4.	Norwich (from Christmas 1804 to Mich. 1805)	3063	13	3	13.	Essex Equitable	1036	9	4
5.	Salamander, or Wiltshire	2829	3	10	14.	Birmingham (half a year to Christmas 1805)	924	18	11
6.	Liverpool	2790	3	4	15.	Finchingfield So. (Essex)	52	0	6
7.	Bath, Old	1599	9	5	16.	Wooler (Northumberld.)	42	16	0
8.	Worcester	1426	13	1					
9.	Norwich Union (from Christ. 1804 to Mid. 1805)	1346	11	5		Total	£30,652	10	4½

Scotch Offices.

	£	s.	d.		£	s.	d.
Friendly (Edinburgh)	2948	0	3	Aberdeen	970	14	4
Glasgow	1955	12	6	Caledonian (one quarter)	661	12	7
Dundee	1521	3	3	Total	£8057	2	7

Ireland.—The return for Ireland was for the year 1801—that is, the year ending 5 Jan. 1802—and was simply in this form, without any details:

	£	s.	d.
In Dublin	£4197	8	8
In the Country	218	5	4
Total	£4405	14	0

Thus there were 11 fire offices transacting bus. in Lond., 16 in the country (English), 5 in Scotland, and probably but 2 in Ireland. The amount of property insured is indicated by these returns to have been about £270,000,000 in the U.K.; of which about £10,000,000 was ins. in Ireland.

1810.—The following amounts of duty were collected by the Lond. F. offices this year:

		£	s.	d.			£	s.	d.
1.	Sun	93,876	16	10	10.	Westminster	12,054	13	10
2.	Phœnix	57,705	4	10	11.	Hand-in-Hand	11,505	12	9
3.	Royal Exchange	45,067	12	10	12.	Eagle	11,355	12	5
4.	Imperial	35,346	14	6	13.	Atlas	9,815	9	6
5.	Globe	27,353	10	6	14.	London	9,312	7	4
6.	British	16,695	5	5	15.	Union	5,847	18	8
7.	Hope	15,878	17	8					
8.	Albion	15,683	8	4		Total	£381,164	0	9
9.	County	13,664	15	4					

Rate of duty 2*s*. 6*d*. per £100 insured. Amount of property insured as calculated from this duty £304,929,650.

1815.—Under the authority of 55 Geo. III. c. 184, passed this year, a commission or allowance to the fire offices for collecting the duty was made upon the following scale: 4 p.c. on duty on town bus.; 5 p.c. upon country bus. This distinction in the rate of allowance on the two branches of bus. appears to have led to the classification of the English offices under the 2 heads of Town and Country. The offices allowed to their country agents this commission, which operated as a stimulus to obtain new ins. On the town ins. the cos. had the benefit of the commission; as they also had the use for something like a half year of the amount of duty in hand. It was thought at a later period that these circumstances kept some of the larger offices from favouring the remission of the duty. On the other hand, the collection of the duty rendered the accounts of the F. offices more cumbrous, and occasionally, at least, subjected them to annoyance.—See COUNTY FIRE OFFICE.

1824.—The following is a return of the duty collected by the English offices this year:

London Fire Offices.

	£		£
Albion	14,428	Hope	13,936
Alliance	9,403	Imperial	32,122
Atlas	17,385	London Assurance	8,112
Beacon	4,746	Palladium	1,067
British	17,606	Phœnix	62,461
British Commercial	2,985	Royal Exchange	47,962
County	43,444	Sun	109,653
Eagle	14,711	Union	16,034
Globe	26,462	Westminster	14,775
Guardian	24,758		
Hand-in-Hand	14,159	Total London Offices	£496,209

Country Offices.

	£		£
Bath (Old)	1,679	Manchester	5,732
Bath Sun	1,553	Newcastle-upon-Tyne	4,581
Berks, Gloucester and Provincial	379	Norwich Equitable	3,073
Birmingham	5,161	Norwich Union	64,951
Bristol	3,333	Reading	97
Bristol Crown	1,791	Salamander	4,108
Bristol Union	2,308	Salop	2,415
Essex Economic	822	Sheffield	1,699
Essex and Suffolk	6,835	Suffolk (East)	5,912
Finchingfield	69	Suffolk (West)	5,834
Hertford, Cambridge and County	2,292	West of England	19,017
Hants, Sussex and Dorset	2,520	Yorkshire	322
Kent	7,972		
Leeds and Yorkshire	1,396	Total Country Offices	£156,401

1831.—The first of the series of annual returns, printed by order of Parl., of the fire ins. duties collected by the individual offices, Lond. and country, was pub. this year. Here is the list arranged in regard to amount of duty paid:

London Offices.

	£	s.	d.		£	s.	d.
1. Sun	124,030	1	10	10. Alliance	20,715	15	1
2. Phœnix	69,390	16	3	11. Union	15,833	13	0
3. Protector	59,789	9	5	12. British	15,572	13	9
4. Royal Exchange	54,586	1	6	13. Westminster	15,116	10	1
5. County	48,519	19	1	14. Hand-in-Hand	11,564	8	11
6. Guardian	31,885	19	1	15. Lond. Assu.	8,583	17	2
7. Imperial	28,230	1	2				
8. Globe	26,597	1	7	Total Town	£551,199	8	10
9. Atlas	20,783	0	11				

Country Offices.

	£	s.	d.		£	s.	d.
1. Norwich Union	68,356	18	2	14. Essex Economic	3,163	16	1
2. West of England	25,683	14	5	15. Norwich Equitable	2,838	10	11
3. Manchester	17,350	3	5	16. Hants, Sussex, & Dorset	2,833	9	7
4. Kent	10,662	10	4	17. Salop	2,811	1	9
5. Suffolk Amicable	13,239	3	2	18. Bristol Union	2,581	4	10
6. Leeds and Yorkshire	7,824	17	9	19. Sheffield	2,065	3	0
7. Birmingham	7,016	0	7	20. Bristol Crown	1,866	8	4
8. Essex and Suffolk	6,490	7	4	21. Bath Sun	1,542	8	0
9. Salamander	5,307	1	7	22. New Norwich Equitable	1,330	0	11
10. Newcastle-upon-Tyne	5,229	8	6	23. Shields, North and S.	719	7	7
11. Yorkshire	4,734	18	7	24. Berks, Gloucester, and Prov. (one quarter)	440	7	6
12. Bristol	3,977	13	7	25. Reading	156	7	1
13. Hertford, Cambridge, and County (three quarters)	3,383	16	1	Total Country	£201,605	9	1

The rate of duty was 3*s.* p. £100 insured (since 1815); amount of property insured about 500 millions. It will be seen that among the Lond. offices the following were new since the return of 1805, viz. *Alliance*, *County*, *Guardian*, *and Protector*, while some others had died out, or discontinued F. bus.; and among the country offices the greater portion were new—16 out of 25. Total London offices, 15; country offices, 25.

No duty returns were pub. for *Ireland* until 1835, or for *Scotland* until 1836. Under these respective dates we shall notice them. We also propose to give the returns decennially, in view not only of tracing the progress of the duty, but more particularly the relative growth, as thus measured, of the several ins. cos. The *actual* growth of the offices cannot be measured in this manner, because on ins. effected in their foreign branches no duty was payable.

1833.—We have seen by the T. at the commencement of this art. that Agricultural Ins. became exempted from duty this year. For some account of the circumstances which led to this, see art. FARMING STOCK INS.; also FIRE INS., HISTORY OF, under this date. This step provoked dissatisfaction among the mercantile interests, which from time to time expressed itself, but in no very decided form, for another quarter of a century.

1835.—The first detailed account of the duties collected by the fire offices transacting bus. in *Ireland* was pub. this year. We deduce the following results from it:

		£	s.	d.
Irish Offices:				
1.	National	4336	18	8
2.	Patriotic	2289	13	3
3.	British and Irish	1645	13	10
4.	Hibernian	1257	0	4
		9529	6	1
English and Scotch Offices:				
1.	Royal Exchange	4721	15	4¼
2.	Atlas	4000	3	5¼
3.	Sun	2391	7	8½
4.	Globe	2186	8	8¾
5.	West of England	2092	4	7¼
6.	Caledonian	1709	7	10
7.	Alliance	1617	5	6½
8.	Phœnix	1304	19	9
9.	Protector	1207	18	11
10.	Union	771	11	4
11.	Scottish Union	718	19	6
12.	County	703	4	11
13.	Imperial	587	9	3½
14.	Manchester	511	10	5
15.	Norwich Union	390	1	10
16.	West of Scotland	379	19	1½
17.	York & North of Eng.	343	5	1
18.	London Assurance	211	2	7½
19.	Leeds and Yorkshire	50	16	6
20.	North British	14	5	8
	Total	£35,434	4	3¼

We shall give the returns for Ireland decennially, for the purpose of comparison.

1836.—The first return of duty paid by the *Scotch* fire offices was pub. for the year 1836, and gave the following results:

		£	s.	d.
1.	Scottish Union	19,508	12	9
2.	North British	6,593	19	11
3.	Hercules	5,627	19	8
4.	Ins. Co. of Scotland	5,576	1	8
5.	Caledonian	5,182	0	0
6.	West of Scotland	4,054	9	3
7.	Friendly	3,777	6	2
8.	Forfarshire & Perthshire	1,966	19	4
9.	Aberdeen Assu.	1,902	3	7½
10.	County & City of Perth	740	11	4
11.	North of Scotland	546	9	11
	Total	£55,476	13	7½

We shall give the returns for the Scotch offices decennially, for the purpose of comparison.

1841.—The duty returns for 1841 for the English offices, town and country, show the following results. We arrange the offices in the order of amount of duty paid:

London Offices.

		£	s.	d.
1.	Sun	163,832	1	5
2.	Phœnix	132,029	17	1
3.	Royal Exchange	71,121	12	8
4.	County	46,160	11	1
5.	Imperial	33,398	12	6
6.	Globe	33,395	11	0
7.	Guardian	33,324	1	5
8.	Alliance	26,751	14	0
9.	Atlas	26,023	14	0
10.	Westminster	20,280	18	11
11.	Union	19,825	5	9
12.	British	18,276	0	3
13.	London Assu.	14,595	16	7
14.	Hand-in-Hand	11,063	7	0
15.	Protestant Dissenters	6,630	19	9
16.	Licensed Victuallers	6,384	9	5
17.	Farmers	4,975	3	9
18.	English and Scottish	1,127	9	4
19.	Church of England	1,088	5	1
20.	Benevolent	11	13	2
	Total Town	£670,295	4	11

Country Offices.

		£	s.	d.
1.	Norwich Union	67,938	11	8
2.	West of England	35,384	13	3
3.	Manchester	26,753	9	3
4.	Yorkshire	12,929	14	8
5.	Leeds and Yorkshire	12,289	6	8
6.	Kent	11,752	11	1
7.	Suffolk (East and West)	11,510	12	6
8.	York and London	10,671	11	4
9.	Birmingham	9,245	4	5
10.	Liverpool	7,271	10	1
11.	Newcastle-upon-Tyne	6,126	14	7
12.	Essex and Suffolk	5,835	10	11
13.	Birmingham District	4,400	5	4
14.	Salop	3,296	6	0
15.	Essex Economic	3,180	14	5
16.	Bristol Union	3,151	13	3
17.	Sheffield	2,783	18	11
18.	Nottingham & Derbyshire	2,665	14	4
19.	Hants, Sussex & Dorset	2,337	14	5
20.	Norwich Equitable	1,824	5	6
21.	Leicestershire	1,652	14	2
22.	Shropshire & N. Wales	1,649	10	3
23.	Reading	169	5	1
	Total Country	£238,821	12	1

Many changes have taken place in this decenniad, alike with the town and the country offices.

1845.—Return of duties collected by F. offices carrying on business in *Ireland*, for purpose of comparison with return for 1835 :

Irish Offices:

		£	s.	d.
1.	National	6093	15	7
2.	Patriotic	4242	9	8
		10,336	5	3

English and Scotch Offices:

		£	s.	d.
1.	Sun	7974	7	4
2.	Royal Exchange	5924	7	9
3.	West of England	5102	10	0
4.	Atlas	4566	5	2
5.	Alliance	3457	16	11
6.	Globe	2478	5	10
7.	Imperial	2187	10	7
8.	Scottish Union	1627	7	9
9.	County	1426	18	0
10.	Phœnix	1363	11	7
11.	Manchester	1075	6	11
12.	Union	1068	1	9
13.	Norwich Union	668	18	10
14.	London Assurance	540	2	8
15.	Liverpool	424	13	7
16.	North British	336	7	8
17.	North of Scotland	313	9	11
18.	Church of England	220	17	1
19.	Licensed Victuallers	179	1	1
20.	Aberdeen	176	0	4
21.	Farmers and General	128	4	2
22.	Royal	100	6	8
23.	Star	63	6	11
24.	Ins. Co. of Scotland	5	3	0
	Total	£41,409	1	6

1846.—The following is the return of the duty collected by the *Scotch* F. offices this year, for purposes of comparison with return first made in 1836 :

		£	s.	d.
1.	Scotch Union	17,683	17	6
2.	North British	14,411	7	2
3.	Friendly	8,359	14	11
4.	Caledonian	7,108	3	6
5.	Ins. Co. of Scotland	6,718	10	7
6.	Hercules	5,431	7	10
7.	National	4,191	0	5
8.	Aberdeen	4,090	11	0
9.	North of Scotland	2,497	19	2
10.	Forfarshire and Perth	2,225	18	2
11.	Western	1,862	17	10
12.	Bon Accord	526	16	7
13.	Morayshire	123	14	8
	Total	£75,231	19	4

(The last two were new offices.)

1851.—The duty returns for this year furnished the following results, the offices arranged in relation to amounts of duty paid :

London Offices.

		£	s.	d.
1.	Sun	182,471	1	11
2.	Phœnix	121,865	19	11
3.	Royal Exchange	75,988	3	9
4.	County	54,069	17	11
5.	Imperial	47,186	6	4
6.	Alliance	44,161	7	9
7.	Atlas	35,105	10	6
8.	Globe	33,105	6	11
9.	Guardian	31,179	10	6
10.	Westminster	24,935	1	1
11.	Union	23,860	18	8
12.	London Assurance	23,683	16	6
13.	Law	21,345	11	10
14.	Royal Farmers	12,073	8	6
15.	Monarch	11,755	13	2
16.	General	10,949	8	6
17.	Hand-in-Hand	9,347	18	7
18.	Legal and Commercial	9,020	0	7
19.	Defender	6,590	19	8
20.	Star	5,622	11	0
21.	National Mercantile	3,772	18	6
22.	Church of England	3,412	15	9
23.	British Empire Mutual	2,918	19	10
24.	British (New)	2,666	4	8
25.	Anchor	1,650	16	5
26.	Equitable	1,336	3	0
27.	National Guardian	281	7	9
28.	Times	114	1	3
29.	English and Cambrian	62	17	11
30.	British Provident	49	15	6
31.	Cambrian Universal	45	19	6
32.	Preserver	38	9	2
	Total Town	£800,669	2	10

Country Offices.

		£	s.	d.
1.	Norwich Union	74,101	15	3
2.	West of England	47,189	7	9
3.	Manchester	20,017	0	2
4.	Yorkshire	17,823	6	6
5.	Royal	16,134	3	7
6.	Liverpool and Lond.	15,081	19	4
7.	Leeds and Yorkshire	14,804	8	5
8.	Birmingham	13,179	1	5
9.	Kent	9,355	18	8
10.	District	6,652	5	4
11.	Newcastle-upon-Tyne	6,113	10	4
12.	Essex and Suffolk	6,007	7	0
13.	Halifax, Bradford, and Keightley	4,797	15	0
14.	North of England	4,241	16	2
15.	Essex Economic	4,158	6	6
16.	Salop	3,751	9	7
17.	Nottingham & Derby	3,244	19	0
18.	Hants, Sussex, and Dorset	2,613	0	10
19.	Norwich Equitable	2,580	2	6
20.	Sheffield	2,430	15	9
21.	Shropshire & N. Wales	1,703	2	9
22.	Kent Mutual	1,649	12	2
23.	Brighton and Sussex	481	18	5
24.	Lincolnshire	358	2	0
	Total Country	£278,471	4	5

M. J. A. Higham contributed to the *Assu. Mag.* vol. ii., T. of the "Amount of Duty paid to Gov. by the Fire Ins. Cos." from 1824 down to 1850 inclusive.

1855.—Return of duties collected this year by F. offices carrying on business in Ireland, for purposes of comparison with previous and later returns:

Irish Offices:	£	s.	d.		£	s.	d.
1. National	5609	11	0	16. Lancashire	507	4	6
2. Patriotic	4986	9	1	17. North British	434	19	8
				18. Church of England	370	0	2
	10,596	0	1	19. Scottish Provincial	194	15	10
English and Scotch Offices:				20. Kent	173	8	6
1. Sun	8125	19	9	21. Anchor	116	10	2
2. West of England	6814	19	2	22. Athenæum	107	13	8
3. Royal Exchange	5522	0	5	23. British Empire	103	8	2
4. Globe	4859	8	5	24. Royal Farmers	61	19	3
5. Atlas	4475	7	3	25. District	21	6	0
6. Alliance	4101	14	7	26. Beacon	19	7	1
7. Imperial	2176	1	5	27. Unity	15	19	6
8. County	2165	5	0	28. Protestant	10	2	6
9. Union	1495	11	11	29. Norwich Equitable	7	4	6
10. Northern	1157	1	4	30. Hand-in-Hand	6	15	5
11. Monarch	1051	3	7	31. London and County	1	9	9
12. Royal	971	8	9	32. Times	1	1	0
13. London Assu.	950	8	7				
14. West of England	649	14	7	Total	£47,272	2	10
15. Equitable	602	12	5				

1856.—There was printed by order of Parl.: *A Rep. on Fire Ins. Duties, by George Coode, Addressed to the Right Hon. Sir George Cornewall Lewis, Bart., M.P., Chancellor of the Exchequer, dated 29th Nov.*, 1856, *and presented by Command of H.M. to both Houses of Parl.* This Rep. at a later date attracted a good deal of attention, and in consequence of a technical error in it, a revised issue was printed in 1863, under which date we shall speak of it again.

The following is the return of duty collected by the *Scotch* offices in 1856, for the purpose of comparison with the returns for 1836 and 1846:

	£	s.	d.		£	s.	d.
1. Scottish Union	26,786	1	0	6. National	5,677	11	1
2. North British	20,414	11	1	7. Forfar and Perth	2,245	11	11
3. Northern	11,489	11	11				
4. Caledonian	9,633	8	3	Total	£83,075	11	11
5. Scottish Provincial	6,846	16	8				

It will be observed that there are only 7 against 13 in the previous decennium: 6 had passed away, and no new one had been estab. The duty collected was, however, more.

1859.—The first practical step towards the abolition of this duty was taken during this year. From time to time for some years past spasmodic steps had been taken in the same direction: that is, various of the older ins. offices had petitioned Parl.; "but exhausting their energies, without producing any palpable result, they forthwith dropped into a state of quiescence." But there was now formed "The Asso. for the Abolition or Reduction of the Duty on F. Ins.," which was destined to play an important part in the forthcoming fight. M.P.s, Directors and Managers of Ins. Cos., Presidents of Chambers of Commerce, merchants and pol.-holders, all combined in well-directed efforts in one direction. Petitions poured into Parl., and newspaper editors began to discover that the movement had acquired vitality. One of the most active movers in the new organization was Mr. H. B. Sheridan, M.P. for Dudley, himself the Man. of an Ins. Co., and therefore supposed to be an authority upon the question. Mr. Baxter, the member for Montrose, was intending to bring the question before Parl.; but he gave way to Mr. Sheridan, who on the 17th March moved for leave to bring in a Bill to reduce the duty. He made an effective speech, and Sir Stafford Northcote, in opposing the measure on behalf of the Gov., was careful not to touch upon the merits of the question. He dwelt on its importance to the Exchequer as an element of revenue simply. On a division the numbers were, for the measure, 102; against, 112; majority against, 10—a very encouraging result for a first effort.

1860.—On the 4th May Mr. Sheridan moved for leave to bring in a Bill to reduce the amount of duty. He made a very strong case, but there had been a change of Gov.; the Liberals were now in power. Mr. Gladstone, as Chancellor of the Exchequer, strongly opposed the measure, and on a division the motion was lost by 108 against 84; majority, 24. Mr. Malins, Mr. Frank Crossley, Lord C. Hamilton, and others spoke in favour of the motion.

1861.—On the 8th March Mr. Sheridan moved his now ann. motion for leave to bring into Parl. a Bill to reduce the duty. Again he used with skill the data and arguments available. The Chancellor of the Exechequer (Mr. Gladstone) again opposed. On a division, the motion was lost by 138 against 49; majority against, 89. It was understood that the anxiety of a large number of members for a repeal of the paper duty interfered much with the prospects of any success in the direction of the fire duty this year. Brighter prospects were in store.

The following is the return of duty collected by the respective town and country fire offices :

Town offices.

	£	s.	d.		£	s.	d.
1. Sun	208,669	10	5	15. Unity	16,076	5	1
2. Phœnix	137,547	19	2	16. Royal Farmers	12,518	18	9
3. Royal Exchange	81,863	8	3	17. Hand-in-Hand	10,330	4	6
4. County	69,184	2	10	18. Law Union	8,002	8	11
5. Imperial	62,735	3	10	19. Church of England	5,058	16	8
6. Alliance	46,592	16	6	20. Mercantile	4,079	17	10
7. Globe	42,796	0	6	21. Commercial Union	3,457	18	8
8. Atlas	41,576	13	7	22. State	2,912	18	3
9. Law	38,225	14	11	23. United Kingdom Prov.	1,524	18	1
10. Guardian	34,487	7	9	24. Emperor	742	15	4
11. London Assurance	33,513	16	3	25. Preserver	45	3	5
12. Westminster	31,809	15	9				
13. Union	31,638	2	11	Total Town offices	£943,282	8	8
14. General	17,893	10	6				

Country offices.

	£	s.	d.		£	s.	d.
1. Norwich Union	83,076	0	10	13. Provincial	7,433	13	1
2. Liverpool and London	61,833	18	7	14. Essex and Suffolk	7,229	13	1
3. Royal	61,480	7	9	15. Midland Counties	5,590	1	10
4. West of England	54,690	11	9	16. Nottingham and Derby	5,145	7	8
5. Manchester	42,178	15	8	17. Salop	4,147	13	10
6. Leeds and Yorkshire	29,053	2	7	18. Sheffield	3,732	15	7
7. Lancashire	24,203	5	6	19. Norwich Equitable	3,136	11	6
8. Yorkshire	23,307	11	5	20. Hants, Sussex & Dorset	2,308	4	3
9. Birmingham	16,086	5	1	21. Shropshire and North Wales	2,086	12	2
10. Kent	15,290	14	8				
11. District	9,044	5	7				
12. Queen	7,854	5	5	Total Country offices	£468,909	17	10

The changes which had taken place during the decennium among the offices are noticed in detail in our HIST. OF FIRE INS.

1862.—On the 1st April—important day in this hist.—Mr. Sheridan again moved for leave to bring in a Bill to lessen the duty. Mr. Gladstone, as Chancellor of the Exchequer, resisted it, and availed himself of Mr. Coode's Rep. [1856 and 1863] to strengthen his arguments; at the same time admitting that a reduction of the duty would increase the tendency to ins., which was one of the principal arguments of the opponents of the duty. On a division, the numbers stood 127 for the measure; 116 against; majority 11. This was a very decided victory. The Bill, however, was not proceeded with.

1863.—On the 14th July Mr. Sheridan again introduced the subject in Parl., but in a different form. He moved a *Resolution*,—"That in the opinion of this House, the duty now chargeable upon F. ins. is excessive in amount; that it prevents ins.; and should be reduced at the earliest opportunity." This resolution did not attempt to bind the House to any particular plan, but was simply expressive of an opinion. Mr. Sheridan advocated a reduction from 3*s.* to 2*s.* for 5 years; and then to 1*s.* Mr. Gladstone again opposed the measure, but the resolution was adopted by a majority of 103 to 67. The fate of the duty was now sealed; it was only a question of time. The matter was not proceeded with in Parl. until the next year.

We may now turn to Mr. Coode's *Revised Rep. on F. Ins. Duties*, which had appeared this year, and on which Mr. Gladstone based his arguments: "Mr. Coode relied on a theory; and the Gov. relied on Mr. Coode"—this was the way Mr. Sheridan put it to the House. The gist of Mr. Coode's argument in support of the tax was based on a comparison of the rate of increase of agricultural ins. since the remission of duty on them in 1833 as compared with that of general ins. not exempted—the latter having increased 7·3 p.c. p.a. on an average since, while the former had only increased 2·7 p.c. p.a. This, he said, rather negatived the supposition that insuring would increase in any notable degree by the lessening or even the removal of the duty. And, further, that until the Exchequer could afford to give up the million and a half of duty ann., there was no substitute tax likely to be so little annoying in assessment or collection! The injustice of expecting one department of our industry to keep pace with our home and foreign commerce generally was indeed apparent; but we may leave this author in the hands of those of whom we are next to speak.

In the same year there was pub. a pamph. bearing the following title: *The Agitation for Abolition or Reduction of the Duty on F. Ins.; and Reply to Mr. George Coode's Blue-book Revised Rep.; showing the Duty to be Bad in Principle, Obstructive to the Progress of Ins.,* *and Opposed to the Public Interest. By an Insurant. Issued by the Asso. for the Abolition or Reduction of the Duty on F. Ins. Offices,* 32, *Fleet Street, Lond.* This is a thoroughly able pub., especially suited to its purpose; and we are very glad to be able to fix the authorship beyond all question in the person of Mr. James Buckle, the now ed. of the *Commercial World.* We the more readily make this statement because we have heard it attributed to, if not actually claimed by, a man of far less calibre, but who, in fact, *could* not have written it. This pamphlet unquestionably aided materially in accomplishing the work in view; and its very success tended to exterminate its fame by placing it among the things of the past. We hope we may succeed in rescuing it from entire neglect. As an indication of its style we take for permanent record its concluding passage:

> It has, however, been our earnest wish to do Mr. Coode in no case less than justice. In the answers we have advanced to his arguments, and the evidence we have adduced in opposition to his assumed facts, we have been prompted by a profound conviction of the essential injustice of the Fire Duty, whether regarded as a tax on property or a tax on prudence. In the former case it is unjust because it is supplemental to the property tax as such; in the latter it is iniquitous because it imposes a fine and a check upon the development of a wise forecast, endeavouring to make provision against one of the direst calamities which can at any time befall a good citizen. In defending these cardinal positions against the unscrupulous onslaughts of Mr. Coode, we may, on occasions, have written with something approaching severity. But an advocate who, endeavouring in the interest of the Gov. to sustain a tottering tax, employs his undoubted talent and ingenuity not only to defend the tax, but to impugn the motives and depreciate the cherished habits and sincere convictions of men who are not a class or section of the community, but conspicuously the most prudent of every grade in the commonwealth; cannot expect to be met in any other than the most earnest spirit of controversy. We have not, we trust, travelled out of that bracing sphere. And in endeavouring to give unmistakable expression to what we know to be the sincere opinions of the great body of insurants throughout the kingdom, we claim on their behalf, although opposed to the duty on fire ins., to be at once and equally the advocates of good government and just taxation.

In the *Companion to the Almanac* for 1864 there is an able art. on *Fire Ins., and its Taxation*, by Mr. George Dodd, in which the arguments of Mr. Coode are subjected to criticism, and many of their fallacies are laid bare.

1864.—The vote of last year had its due effect. The Chancellor of the Exchequer in his budget speech proposed a remission of one-half the duty on ins. on stock-in-trade. Mr. Sheridan and others in committee made an effort to obtain a reduction even of a lesser amount extended over F. ins. generally. In this they were not successful.

Finally, there passed through the House the 27 & 28 Vict. c. 18—*An Act to grant certain Duties of Customs and Inland Revenue.* Sec. 9 gave a definition of "stock-in-trade," viz. that it should be understood to mean "goods, wares, and merchandize in the possession of the manufacturer thereof for sale, or in the possession of any manufacturer as materials to be used for the purpose, or in the process of any manufacture, or in the possession of any trader for sale in the course of his trade, or in the possession of any person on behalf of such manufacturer or trader, or in the possession of a licensed pawnbroker, being goods received by him in pledge." All property so insured was to be distinguished in the pol., and also in the quarterly accounts of the office (sec. 10). The reduction to take effect from the 24th June this year.

1865.—Return of duties collected by F. offices carrying on business in *Ireland*, for purposes of comparison with previous returns:

Irish Offices:	£	s.	d.
1. National	4218	11	11
2. Patriotic	3589	6	9
	7807	18	8
English and Scotch Offices:			
1. Sun	6101	1	1
2. Liverpool, London, and Globe	5730	17	7
3. Royal	5423	6	4
4. Alliance	4054	16	10
5. West of England	3750	3	9
6. Royal Exchange	3340	3	1
7. Atlas	2338	13	0
8. Imperial	2175	7	5
9. County	2111	5	6
10. N. Brit. and Mercantile	1926	1	3
11. Commercial Union	1484	16	0
12. Queen	998	7	5
13. London Assu.	900	13	9
14. London and Lancashire	816	9	2
15. Scottish Provincial	741	8	0
16. Norwich Union	696	3	1
17. Union	653	4	1
18. European	620	7	6
19. Western	378	13	7
20. Lancashire	366	14	4
21. Church of England	327	13	1
22. Caledonian	324	18	1
23. Guardian	321	19	4
24. City and County	283	17	3
25. Hercules	267	1	10
26. Provincial	240	19	5
27. Kent	217	12	5
28. Scottish Fire	196	18	5
29. Home and Colonial	159	9	0
30. Manchester	87	3	11
31. General	85	10	8
32. London and Southwark	82	17	2
33. Albert	82	11	5
34. Liverpool and London (arrears)	61	16	1
35. Law Union	42	8	8
36. British Nation	31	17	0
37. Scottish Commercial	26	13	8
38. Royal Farmers	22	2	6
39. Hand-in-Hand	1	18	3
40. State (arrears)	1	13	0
41. Globe (arrears)	0	8	3
42. Friend-in-Need	0	4	6
Total	£55,284	6	1

The number of offices competing for the bus. in Ireland showed a constant increase but the progress of the duty collected was very steady.

1868.—Until this year no F. ins. duty had been charged upon property in the Channel Islands. It was then suddenly found by the authorities at Somerset House that it was liable; and from the 25th of March, 1868, duty was charged. This was a species of "expiring flicker."

The following is the return of the last complete year's F. ins. duty collected, viz. 1868, showing the amounts collected by the town and country offices, also by the Scotch and Irish offices, and by the foreign F. offices having agencies in the U. K.

Town Offices.	£	s.	d.
1. Sun	120,637	10	1
2. Phœnix	75,168	10	4
3. County	49,510	17	8
4. Alliance	47,782	3	9
5. Royal Exchange	46,760	12	7
6. Imperial	37,850	15	9
7. Law	27,733	1	9
8. Atlas	25,464	6	0
9. London Assu.	22,667	0	7
10. N. Brit. & Mercantile	22,424	17	7
11. Guardian	21,483	0	11
12. Westminster	19,512	0	10
13. Union	17,321	15	1
14. Commercial Union	14,117	5	6
15. General	12,663	15	1
16. Law Union	8,135	9	0
17. Royal Farmers	7,168	14	3
18. Hand-in-Hand	5,832	6	0
19. Church of England	3,482	10	11
20. Lond. and Southwark	2,332	16	9
21. English	1,033	12	8
22. Hercules	931	12	1
23. Emperor	378	7	1
24. Household	67	1	7
25. Preserver	52	17	0
26. United Ports and Gen.	34	6	10
27. European	29	13	0
28. Lond. and Manchester	11	0	3
29. Masonic and General	7	1	0
Total Town Offices	£590,595	1	11

Country Offices.	£	s.	d.
1. Liverpool, Lond. and Globe	95,705	1	2
2. Royal	73,868	14	2
3. Norwich Union	49,422	0	6
4. West of England	32,559	0	10
5. Lancashire	22,818	14	6
6. Manchester	21,912	6	10
7. Queen	14,797	19	8
8. Yorkshire	14,234	4	2
9. Lond. and Lancashire	12,784	16	9
10. Kent	9,692	5	9
11. Provincial	7,158	10	9
12. Essex and Suffolk	4,258	14	3
13. Nottingham and Derby	3,179	10	1
14. Midland Counties	2,909	0	3
15. Salop	2,673	17	8
16. Birmingham Alliance	1,906	11	2
17. Norwich Equitable	1,804	17	4
18. Shropshire and North Wales	1,304	9	11
19. Primitive Methodists	234	2	2
20. Oldham	14	18	7
Total Country Offices	£373,239	16	6

Scotch Offices.	£	s.	d.
1. N. Brit. and Mercantile	24,680	8	1
2. Scottish Union	20,858	11	4
3. Northern	20,625	3	0
4. Caledonian	9,905	14	11
5. Scottish Provincial	7,827	6	10
6. Scottish National	4,894	11	8
7. Scottish Commercial	4,441	2	3
8. Scottish Fire	3,157	10	3
9. Scottish Imperial	2,830	5	9
10. Stewarton, Dunlop, and Fenwick Mut.	1	13	1
Total Scotch Offices	£99,222	7	2

Irish Offices.	£	s.	d.
1. National	3,516	1	1
2. Patriotic	2,984	17	11
3. Etna	2,316	7	6
Total Irish Duty	£8,817	6	6

Foreign Offices Transacting Bus. in Eng.	£	s.	d.
1. Azienda Assecuratrice	508	16	1
2. Netherlands	128	6	3
3. Concordia	24	18	4
4. Rotterdamsche and Netherlandsche	8	17	5
5. Messrs. Dormiel	8	10	0
Total Duty Collected by Foreign Offices	£679	8	1

1869.—On the 8th April this year the new Chancellor of the Exchequer—Hon. Robert Lowe—introduced his financial budget, and in the elaborate statement which he unfolded upon that occasion he pronounced the funeral oration of the Fire Ins. Duty as follows:

> There is another matter which I have to consider, and it is one on which I need not detain the Committee at any length, because it has been so often argued in this House, and the opinion of the House has been so often expressed upon it. I allude to the Fire Ins. Duty. The Fire Ins. Duty has been the subject of much metaphysical definition, but it has never been better defined than by the First Minister of the Crown, when he said that it was an income tax with two great exceptions—the one in favour of persons rich enough to be their own insurers, and the other in favour of those who are not rich enough to be able to be their own insurers but who are too improvident to insure at all. The subject is already exhausted, and I shall not, therefore, go into any detail upon it. I entirely agree with those who think that it is vain to look for a revival of a tax like this. It is a tax on property; but men who are thoroughly improvident will not be made wiser by lowering the duty, for if so he would not be so improvident now. It is a tax, too, which appears to me to have many grievous faults. One especially is that it is an optional tax, and that the man who refuses to pay escapes taxation by doing that which is most likely a very foolish and improvident thing. That is

certainly the effect. It is a sort of penalty on providence. But I don't agree with the member for Dudley, who has so frequently directed attention to the subject, that there is a recuperative power in the tax he speaks of. If we lower it very much there is this difficulty. The tax is levied by a per-centage of, I think, 8 p.c., and when you diminish the tax on ins. you do not in the least diminish the trouble of collection, but you diminish the per-centage to be gained upon it; and if you go below a certain point—and that point, I believe, you are not far from already—you will find that the expense of the collection becomes greater. Under this conviction the Government have thought the best plan would be, seeing the strong feeling so long entertained on the subject, to repeal the tax altogether (cheers). I will moderate that cheer by this remark, that when the duty was lowered from 3*s.* to 1*s.* 6*d.*, the change did not come into effect till the following Midsummer; so now we propose, as we have entered upon the quarter, and an Act of Parl. will be required to do away with the tax, the abolition shall date from Midsummer next.

The ins. offices and the public were taken by surprise at this sudden and unqualified announcement. The hist. is not quite ended.

On the 5th July Mr. H. Beaumont asked the Chancellor of the Exchequer whether in the case of septennial fire ins. pol. which had still a few years to run, and on which fire ins. duty commuted at six years was paid in advance, he would be prepared, now that the fire ins. duty was abolished, to return to the insured, through the ins. offices, the amount of duty paid on such pol. in respect of the period occurring after the abolition of the duty? The Chancellor of the Exchequer, in reply to the question of the hon. member, remarked that those who insured seven years in advance obtained the remission of one year's duty, and that the arrangement so entered into was made subject to whatever might be the pleasure of Parl. If the duty had been raised, he did not think that those insurers would have applied for permission to pay a larger sum, and they must, therefore, take their chance of what has happened. Under these circumstances, it was not the intention of Government to make any return whatever.

By way of completing the statistics of this branch of our subject, we add the following:

Amount of Fire Ins. Duty paid in ENGLAND *and* WALES, SCOTLAND *and* IRELAND, *in the Under-mentioned Years.*

Percentage Duty.	Years Ended.	E. and W.	Scotland.	Ireland.	Total.
		£	£	£	£
1*s.* 6*d.*	1st Aug. 1783	142,822	....	....	142,822
,,	,, 1784	116,201	....	....	116,201
,,	,, 1785	102,433	....	....	102,433
,,	,, 1786	99,587	....	....	99,587
,,	,, 1787	102,689	1,315	....	104,004
,,	,, 1788	101,323	1,414	....	102,737
,,	,, 1789	104,918	1,564	....	106,482
,,	,, 1790	108,711	1,654	....	110,365
,,	,, 1791	113,165	1,851	....	115,016
,,	,, 1792	121,567	1,999	....	123,566
,,	,, 1793	132,955	2,140	....	135,095
,,	,, 1794	132,372	2,050	....	134,422
,,	,, 1795	132,536	2,165	....	134,701
,,	,, 1796	141,256	2,421	....	143,677
2*s.* 0*d.*	,, 1797	136,122	2,423	....	138,545
,,	,, 1798	183,756	3,157	....	186,913
,,	,, 1799	198,634	3,497	....	202,131
,,	5th Jan. 1800	91,783	1,030	....	92,813
,,	,, 1801	204,947	3,614	....	208,561
,,	,, 1802	219,624	3,786	....	223,410
,,	,, 1803	223,548	3,895	....	227,443
,,	,, 1804	238,067	5,419	....	243,486
2*s.* 6*d.*	,, 1805	260,610	5,423	7,274	273,307
,,	,, 1806	321,155	7,241	7,092	335,488
,,	,, 1807	341,193	9,803	4,107	355,103
,,	,, 1808	352,050	11,413	15,142	378,605
,,	,, 1809	378,875	12,034	17,447	408,356
,,	,, 1810	406,037	13,362	19,768	439,167
,,	,, 1811	434,158	16.435	22,408	473,001
,,	,, 1812	447,757	17,245	21,368	486,370
,,	,, 1813	553,252	15,677	24,584	593,513
,,	,, 1814	437,381	15,918	26,633	479,932
,,	,, 1815	486,540	16,410	27,832	530,782
3*s.* 0*d.*	,, 1816	501,955	16,670	24,451	543,076
,,	,, 1817	573,213	19,242	25,570	618,025
,,	,, 1818	577,428	20,163	22,224	619,815
,,	,, 1819	584,244	20,198	21,855	626,297
,,	,, 1820	595,263	21,865	22,701	639,829
,,	,, 1821	586,898	22,244	21,737	630,879

Percentage Duty.	Years Ended.	E. and W.	Scotland.	Ireland.	Total.
		£	£	£	£
3*s.* 0*d.*	5th Jan. 1822	599,534	21,827	21,943	643,304
,,	,, 1823	607,834	23,342	21,607	652,783
,,	,, 1824	602,502	24,846	21,931	649,279
,,	,, 1825	641,550	28,018	26,544	696,112
,,	,, 1826	663,334	38,120	24,028	725,482
,,	,, 1827	691,867	45,990	25,251	763,108
,,	,, 1828	670,032	47,094	26,554	743,680
,,	,, 1829	706,244	47,563	28,241	782,048
,,	,, 1830	723,323	50,459	28,506	802,288
,,	,, 1831	717,275	51,579	29,222	798,076
,,	,, 1832	748,679	50,673	29,209	828,561
,,	,, 1833	755,597	51,164	29,334	836,095
,,	,, 1834	754,695	51,215	31,527	837,437
,,	,, 1835	725,909	50,538	32,774	809,221
,,	,, 1836	756,193	53,230	34,802	844,225
,,	,, 1837	780,528	54,630	37,003	872,161
,,	,, 1838	805,996	57,200	40,114	903,310
,,	,, 1839	835,061	59,104	41,370	935,535
,,	,, 1840	864,656	60,316	43,503	968,475
,,	,, 1841	885,691	59,746	45,348	990,785
,,	,, 1842	900,991	64,938	45,705	1,011,634
,,	,, 1843	920,526	65,893	46,769	1,033,188
,,	,, 1844	921,809	65,498	48,720	1,036,027
,,	,, 1845	935,442	68,227	49,623	1,053,292
,,	,, 1846	961,020	70,684	51,417	1,083,121
,,	,, 1847	980,830	74,640	53,089	1,108,559
,,	,, 1848	1,003,138	73,080	54,044	1,130,262
,,	,, 1849	1,001,469	64,393	50,947	1,116,809
,,	,, 1850	1,019,721	64,171	50,529	1,134,421
,,	,, 1851	1,042,396	65,875	51,259	1,159,530
,,	,, 1852	1,070,727	67,229	52,549	1,190,505
,,	,, 1853	1,098,457	68,099	53,825	1,220,381
,,	,, 1854	1,141,346	71,600	56,479	1,269,425
,,	,, 1855	1,178,026	76,782	58,557	1,313,365
,,	,, 1856	1,203,861	78,614	59,249	1,341,724
,,	,, 1857	1,243,341	82,294	62,559	1,388,194
,,	,, 1858	1,269,120	87,337	65,127	1,421,584
,,	,, 1859	1,311,636	92,067	67,619	1,471,322
,,	,, 1860	1,334,282	97,390	71,277	1,502,949
,,	,, 1861	1,375,798	106,250	76,744	1,558,792
,,	,, 1862	1,412,079	117,269	80,496	1,609,844
,,	,, 1863	1,502,214	129,043	83,365	1,714,622
part at 1*s.* 6*d.*	,, 1864	1,455,222	125,136	76,085	1,646,443
,,	,, 1865	1,081,373	96,619	55,284	1,233,276
all 1*s.* 6*d.*	,, 1866	867,961	80,304	50,886	999,151
,,	,, 1867	894,442	87,637	41,933	1,024,012
,,	,, 1868	921,486	99,222	51,923	1,072,631
half year	,, 1869	389,051	48,773	20,796	458,621

This T. is mainly drawn from Mr. Coode's Rep.; but he points out that the account of the duty is not to be relied on in the comparison of immediately consecutive years, inasmuch as before the year 1850 large arrears of duty were often allowed to accrue in one year, sinking suddenly the return for that year, and proportionally exaggerating the return of a subsequent year in which they were paid up. In the year 1850 arrangements were made in the office of the Registrar of Fire Ins. Duties to secure more punctual payments of the duty, and the immediate effect was, that in the first quarter of 1851 about £8,000 out of £12,000 of outstanding arrears were paid in. Since that date no large amount due in one year has been paid in another, so as to cause the produce of the duty to be in any important degree misrepresented in the Table.—*Revised Rep.*, p. 2.

FIRE Ins., Estimated Amount of.—See Fire Ins., Statistics of.

FIRE Ins., Finance of.—The Finance of F. Ins. has not been made, at least in Gt. Britain, the subject of such exact regulation as that of Life Ins. The bus. is altogether of a different character. It differs also from Marine Ins., where voyage risks sometimes extend over several years. The Finance of Fire Ins. is, speaking generally, of the simplest order. A fire ins. asso. paying its claims as they arise during the year, reserving a sum sufficient to cover all unadjusted losses, and having beyond this *a sum sufficient to re-insure its current risks*, must be regarded as solvent. In practice fire offices usually have something more than this. At commencing they always have some cap.—there are no mut. fire offices estab. now. When they were prevalent, they usually required something beyond the premium to be deposited on the acceptance of a risk. They built up a species of Guarantee Fund from the sums so deposited by the members. On the termination of the ins., these deposited sums were returned, less the proportion required (if any) to pay losses beyond the expected average. Modern fire offices start with some cap. This is the source from which losses exceeding the amount of the prem. fund are to be defrayed. It is also the fund from which the expenses of formation and early management must be provided.

As the office grows, and begins to assume a dividend paying power, prudence dictates that a portion of the profits shall be reserved. The reserve thus created is designed to perform several functions. 1. It stands to meet extraordinary losses, to which all fire offices, large and small, seem liable. 2. It is a medium for equalizing dividends. If the losses of any given year are so great as, together with the expenses, to absorb the Prem. Fund, this Reserve Fund, formed out of the profits of previous years, may well be applied to the purpose of paying a dividend upon the cap. Equitably it all belongs to the stockholders, subject of course to applications of it under the regulations of the co. 3. It protects the cap., the uncalled as well as the paid portion. Until the Reserve Fund be exhausted, the investments in which the cap. has been employed need not be disturbed; nor will any portion of the uncalled cap. be required.

The ordinary Finance of Fire Ins., then, resolves itself into four heads. 1. The Cap., or Guarantee Fund. 2. The Prem. Fund. ; . The Re-insurance Fund. 4. The Reserved Fund. The especial functions, proportions, and incidents of these several funds must now be looked at in a more detailed manner.

1. **The Capital.**—Regarding this, the first point is its amount; then the denomination of the shares; and next, what proportion should be paid up, and what proportion remain uncalled. (1). The amount of nominal, or authorized, cap. should be fixed, in part at least, in relation to the intended bulk of the co.'s operations; and also in regard to the nature of the bus. proposed to be undertaken. For instance, if a small select, or class, bus. be intended, of course a small cap. will suffice; but if a large general bus. be contemplated, an increased cap. will be necessary; while if special hazards, such as mill, warehouse, and manufacturing risks, be contemplated, either a larger cap. should be fixed, or a greater proportion of the smaller cap. must be paid up.

There is indeed this initial difficulty, that in consequence of the repeated failure of ill-founded young fire cos., it is exceedingly difficult to get a large cap. subs. under any circumstances. But there is the intermediate course of issuing the cap. in sections, as the growth of the bus. may seem to require, and to justify. This, if done with prudence, may be the means of strengthening the office—because a prem. may be obtained on all issues of shares after the first. We have seen this accomplished with great success by one or two offices—notably by the *Lancashire*. There is always the fear that when a co. has become a success on a small cap., the cupidity of the proprietors will operate to prevent any extension of this base of operations.

Remembering that it is regarded as exceedingly damaging to the prospects of a co. to offer a cap. of which but a small proportion is taken up, a moderate amount in the first instance seems best in all cases. Hence for a small bus., say £50,000, in two or three issues, as £20,000 at first, and the subsequent issues to be regulated by the growth of the enterprise. For a general bus., say a nominal cap. of £200,000 or £250,000, first issue £100,000.

Regarding (2) the denomination of shares, modern experience all goes in the direction of shares of small amount. It is impossible to induce responsible people to hold shares in new enterprises with any large proportion of their amount uncalled; nor can such find a market when a trans. becomes necessary. The credit of the co. is affected by this latter difficulty. Shares in modern F. offices range from £1 to £10. Prob. from £2 to £5 is the most convenient limit.

The last point depends very much upon the next one (3) What proportion is to be paid up? If the whole of the subs. cap. be paid up, however well it may be invested, there remains in a lim. liability co. a feeling of insecurity, which must be damaging to the bus. If the greater proportion of the shares be uncalled, there is an equal feeling of insecurity. In the event of emergency the holders will rather lose what is already paid than make any attempt at further contributions. The medium course seems desirable. Say £5 shares with £1 paid at starting, and 10*s.* further at the expiration of 3, 6, and 9 months—leaving £2 10*s.* unpaid, will we think secure confidence.

Speaking generally, the principle is sound that the smaller the cap. upon which any enterprise can be worked, the more advantageous for the subscribers. The events of the last few years have, however, gone to show that in the matter of Fire Ins. the cap. must bear a reasonable proportion to the volume of the bus.—and perhaps some definite proportion to the maximum lines on individual risks,—certainly to the total insured on any one inflammable city—if the preservation of the co., after the occurrence of great calamities, be regarded. The relation of the cap. to the maximum lines on individual risks, or to the aggregate sums at risk on towns, will be again spoken of under the head *Reserved Fund.*

In most of the several States of the U.S. Stock F. Ins. Cos. are prohibited from commencing bus. with less than 100,000 dols. paid up and invested in prescribed securities. Some States require 200,000 dols. In *Iowa* the minimum is 50,000 dols.; the maximum one million. The mut. F. offices are all required to have a guarantee fund of a defined limit actually subscribed. Impairments have to be replaced.

2. **Premium Fund.**—The Prem. Fund of a fire office answers to the Life Fund of a life office, except that the latter has to be continuously improved at interest, whereas in a fire office the interest realized is not an element in the calculation. The prems. are paid in advance. On mercantile ins. frequently for very short periods; under ordinary fire pol. for one year; and under term pol. for 5 or 7 years. Confining ourselves in this example (except where otherwise stated) to the ann. prems.; these are not received at the commencement of the year, but either daily, or in Gt. Brit. for large classes of bus., at the four respective quarter-days. The prems. received at the Christmas quarter, *i.e.* within 14 days after 25th Dec., if brought into the new year's account, represent risks which run off during the year; those received for the Michaelmas quarter have only one-fourth run off, leaving three-fourths unexpired. It is usually regarded that, taking one quarter with another, the prems. received during the year cover risks which have *half* run off. It is important to point out that this assumption may not be strictly accurate. For instance, assuming the financial year of a co. to run with the calendar year, from 1st Jan. to 31st Dec. (as by law in the U.S. it may be made to do), and that the first quarter's prems. brought into account are those for 25 March and the last quarter the 25 Dec., the co. will on those particular risks have run off but 4½ months during its financial year. But it will prob. have brought into account the claims paid between 1 Jan. and 25 March, and therefore it may still embrace 12 months' claims against 12 months' prems. If the bus. be about stationary, the financial results will prob. be of the average character; but if the bus. be very rapidly increasing, or decreasing, some material variations may be experienced.

The Prem. Fund of the year consists of the prems. brought into account during the year, and of any bal. brought forward after providing for the outstanding claims at the commencement of the year. The charges against the fund are (1) expenses of man., including agency commission (which latter, except as a matter of account, never does come into the fund); (2) fire losses adjusted and unadjusted (the latter by estimate); (3) dividend on cap.; (4) re-insurance of unexpired portion of risk. On each of these heads considerations arise.

The *Expenses of Man.*, speaking generally, will bear a larger proportion to the prem. income on a small than on a large bus. If the co. transact a foreign bus., these will prob. be larger than in the case of home bus. only. In the first few years they will prob. have to be provided out of cap. Afterwards and permanently they should be kept under 30 p.c. of the prems.

The *Claims* will prob. average 60 p.c. of the prems.; in bad years more.

The *Dividend* will depend upon the successful operations of the year. If losses and expenses have absorbed the revenue, a dividend, if paid, must come out of the Reserved Fund. [See some special remarks as to dividends later on in this art.]

The subject of *Re-insurance* comes under our next general head.

3. **Re-insurance Fund.**—Insomuch as the risks of the year, as we have seen, only usually half run off during the year, it becomes a necessary part of F. Ins. Finance to set apart such a sum as will provide re-insurance for all outstanding risks under current pol. The losses being estimated at 60 p.c on the entire bus., and the risks being half run off, it follows that 30 p.c. of the prems. will be required for re-insurance. But there may be mercantile risks upon which but a few days may have run off at the close of the year; and there may be pol. for terms of years, of which but a small proportion of the time is expired. Hence it is usual to consider that the Re-insurance Fund should be put at 35 p.c. In a rapidly growing bus. it must be still more. So that in practice it may be said that the Re-insurance Fund must stand at from 40 to 50 p.c. of the year's prem. income.

In the U.K. it is not usual to introduce into the revenue account any charge for re-insurance. The income of the year is credited with (1) prems., (2) int. and dividends on investments, (3) bal. from preceding year; and debited with (1) claims, (2) expenses, (3) dividends, (4) balance carried to reserve—which reserve in some sort, as we shall see under the next head, is in reality the Re-insurance Fund. A year's prems. and a year's claims are brought into account—but the claims are at least to the extent of about one-half the result of prems. received in the preceding year. This is the method of convenience, not of science.

The bal.-sheets of fire offices in the U.K. also too often omit from consideration the re-insurance item. On what ground such an omission can be justified we know not. The bal.-sheet should debit itself with paid-up cap., with reserve funds of all kinds, with all unpaid claims and outstanding accounts, and *with the amount required to re-insure all outstanding risks*, as on the day to which it is made up; it will credit itself with all its investments, cash, and securities, also with agents' balances so far as the same may be good. If there be a bal. on that side of the account, it will go in diminution of the cap. and reserves on the debit side of the account. If the balance be on the debit side, then the affairs are still prospering. But a balance-sheet without a debit for re-insurance is a fraud in fact, however honest it may be in intention. We know it may be contended that the good-will of the bus. *should be equal to the cost of re-insuring outstanding risks.* Where the bus. has been successfully conducted, that is so; but when disaster comes—the usual time for testing the value of good-will—it sometimes suddenly disappears. In fact there is no value in the good-will of a badly-selected bus.

In the State of *New York* the Ins. Supt. now requires all fire offices to bring into their returns 50 p.c. of the prems. on unexpired risks as a Re-insurance Eund. On ins. running more than one year the re-insurance reserve must be pro rata on this basis. (16th Ann. Rep. 1875, p. 24.)

The greatest living authority on the Finance of F. Ins.—Mr. Swinton Boult—is of opinion that in the place of, and in substitution for, a charge for re-insurance, every balance-sheet should contain an item of "expected claims," as against risks not run off; and he would estimate the amount in this form. If a million sterling in sums insured brings claims say of £10,000 p.a., and the claims of the year on such a bulk of bus. included in the bal.-sheet as paid be £4000 only, he would include an item of £6000 further for expected claims. He makes the sum insured the basis of his estimate, and not the prem. income. Technically he is probably right; but if the prems. are properly assessed, the one form should be as effective as the other. [See heading *Limitation of Dividends* in this art.]

4. Reserved Fund.—This fund is composed of surpluses remaining after providing for claims, expenses, and dividends, in the yearly accounts. Its ordinary purposes we have glanced at in the early part of this art. But in add. to its major function of providing for extraordinary losses, and so of protecting the credit of the co., and guarding its cap. from casualties; and its minor function of equalizing dividends; it is clear that in all F. ins. cos. wherein the re-insurance of outstanding risks is not ann. provided for (in account), the Reserved Fund stands in the place of a Re-insurance Fund. It may, from not having been created for this especial purpose, be either too small in amount or too large; but as far as it goes, or is required, here is the means of re-insurance. This is a light in which the Reserved Fund of a F. office is not usually regarded; and it may be well to offer a few additional considerations respecting it.

The measure of the Reserved Fund, where the add. function of a Re-insurance Fund is thrown upon it, must clearly be, in its minimum aspect, the amount which, at a fair estimate, is necessary for the re-insurance of current risks at any given date; nor must it ever be drawn upon, in regard to its minor purposes, in such a manner as to bring it below that minimum.

If the fund be drawn upon for fire losses, the payment of such losses being the main purpose of the co., nothing more is to be said than that its reinstatement to the amount required for re-insurance must take priority of the payment of any dividends to the stockholders.

Pending the reinstatement of the Reserved Fund, no doubt the paid-up cap. comes in, and reverts to one of its orig. purposes, viz. that of protecting the risks on the cos. by means of re-insurance, and otherwise. If the cap. becomes impaired by this process, either of two things may happen: (1) where the law of the State under which the co. derives its legal constitution enacts any limit of impairment of cap. (as the Ins. Laws of the State of New York do: its limit being 20 p.c.), the deficient cap. below that limit must be forthwith replaced; or (2) where the constitution of the co. shall provide for dissolution when a certain proportion of the cap. shall be lost, the entire extinguishment of the co. may follow. On a further supposition, that the impairment of the cap., as shown by a properly constructed bal.-sheet, is not speedily replaced, the credit of the co. will suffer, and its bus. pass away.

NEW LAW IN THE U.S. REGARDING FIRE RESERVED FUNDS.—In view of the casualties last named, and to enable fire offices to preserve their existence in the event of the recurrence of the almost overwhelming casualties which have occurred in recent years, the Legislature of the State of N. York passed in the Session of 1874 *An Act to provide Security against Extraordinary Conflagrations, and for the Creation of Safety Funds by Fire Ins. Cos.*, of which we propose here to give an outline.

Sec. 1 provides that thereafter it shall be lawful for any F. ins. co. organized under the laws of that State to create funds to be known as (1) the Guaranty Surplus Fund, and (2) the Special Reserve Fund; and to avail itself of the provisions of this Act upon complying with its requirements. 2. Any co. desirous to create such funds must adopt resolution of board, to be filed in the Ins. Department, declaring the intention of the co. to create such funds, and to do bus. under the provisions of this Act; after which the Supt. shall make an examination of the finances of such co., and state its surplus funds, which, under the provisions of this Act, may be equally divided and set apart to constitute such funds; and from and afterwards all pol. and renewals shall have printed thereon that the same are issued under the provisions of this Act.

3. After the date mentioned in any resolution so passed and filed as aforesaid, it shall

not be lawful for such co. to make or declare a dividend in any form exceeding 7 p.c. p.a. on its cap. stock and surplus funds, until after the funds to be created hereunder shall have together accumulated to an amount equal to its cap. stock ; and the entire surplus profits of such co. above 7 p.c. shall be equally divided and carried to the said two funds.

4. The *Guaranty Surplus Fund* shall be held invested by the co. the same as its cap. stock and surplus accumulation, and shall be applicable generally to the payment of losses of the co.

The *Special Reserve Fund* to be deposited from time to time with the Supt., and invested according to the Laws regulating the investments of fire ins. cos. ; the co. being entitled to receive interest and dividends, "and such Special Reserve Fund shall be deemed a fund contributed by the stock-holders to protect such co. and its pol.-holders, other than claimants for losses already existing, or then incurred, *in case of such extraordinary conflagration or conflagrations as hereinafter mentioned ;* AND SAID FUND SHALL NOT BE REGARDED AS ANY PART OR PORTION OF THE ASSETS IN POSSESSION OF THE SAID CO. SO AS TO BE OR RENDER THE SAME LIABLE FOR ANY CLAIM OR CLAIMS FOR LOSS BY FIRE OR OTHERWISE, EXCEPT AS HEREIN PROVIDED."

6. "In estimating the profit of any such co. for the purpose of making a division thereof between such Guaranty Surplus Fund and such Special Reserve Fund, there shall be deducted from the gross assets of the co., including for this purpose the amount of the Special Reserve Funds, the sum of the following items : 1. The amount of all outstanding claims. 2. *An amount sufficient to meet the liability of such co. for the unearned prems. upon its unexpired pol.*, which amount shall be *at least equal to one-half of the prems. received on the pol. having less than one year to run from the date of pol.*, and a pro rata proportion of the prems. received on pol. having more than one year to run from date of pol. and shall be known as the re-insurance liability. 3. The amount of its Guaranty Surplus Fund and of its Special Reserve Fund. 4. The amount of the cap. of the co. 5. Int. at the rate of 7 p.c. p.a. upon the amount of the cap. and of the said funds for whatever time shall have elapsed since the last preceding cash dividend ; and the balance shall constitute the net surplus of the co., subject to an equal division between the said funds as herein provided."

7. "In the event of any extensive conflagration or conflagrations, whereby the claims upon such co. shall exceed the amount of its cap. stock and of the Guaranty Surplus Fund provided for by this Act, the said co. shall notify the said Supt. of the fact, who shall then make, or cause to be made, an examination of the said co., and shall issue his certificate of the result, showing the amounts of cap., of Guaranty Surplus Fund, of Special Reserve Fund, of re-insurance liability, and of other assets ; and upon his issuing such certificate in duplicate, one copy to be given the co. and one copy to be recorded in the Ins. Department, *the said Special Reserve Fund shall be immediately held to protect all pol.-holders of such co., other than such as are claimants upon it at the time, or such as become such claimants in consequence of such conflagration or conflagrations ;* and the amount of said Special Reserve Fund, and an amount equal to the unearned prem. of such co., to be ascertained as hereinbefore provided, shall constitute the cap. and assets of such co. for the protection of pol.-holders other than such claimants, and for further conduct of its bus., and such official certificate of the Supt. shall be binding and conclusive upon all parties interested in such co., whether as stock-holders, creditors, or pol.-holders, and upon the payment to the claimants, for losses or otherwise, existing at the time of or caused by such general conflagration or conflagrations, of the amount to which they are respectively entitled, in proportion to their several claims, of the full sum of the cap. of such co. and of its Guaranty Surplus Fund, and of its assets, *excepting only such Special Reserve Fund and an amount of its assets equal to the liability of the co. for unearned prems. as so certified by such Supt., such co. shall be for ever discharged from any and all further liability to such claimants and to each of them.*" The Supt., after issuing his certificate, to transfer to the co. on demand all the securities constituting such Special Reserve Fund ; but if such fund be less than half the cap. of the co., then the same to be made up to 200,000 dols. by assessment on stock-holders. If the cap. be not made up, the Special Reserve Fund to be held as security for existing pol. The amount of each fund to be set forth in ann. statement sent to Ins. Department.

The cos. availing themselves of this law are designated "Surplus Cos."

8. "If at any time after said Special Reserve Fund shall have been accumulated by any co., it shall appear upon examination by the said Supt. that the cap. of such co. has, in the absence of any such extensive conflagration, become impaired so as to cause him to order a call on the stock-holders to make up such impairment, the board of directors of such co. may either comply with such order, and require the necessary payment by the stock-holders, or, at their option, they may apply for that purpose so much of said Special Reserve Fund as will make such impairment good. *No co. doing bus. under this Act shall insure any larger amount upon any single risk than is permitted by law to a company possessing the same amount of cap., irrespective of the funds hereby provided for.* [See *Limits of Ins. on Individual Risks*, hereafter.]

This Act, which took immediate effect from its passing, was prob. designed to prevent the failure hereafter of prudently managed fire offices in the State of N.Y., whatever the extent of the disasters they may experience. Such at least is its effect. The co. sets apart a portion of its own profits *to insure its own existence.* It revives in some sort the old idea of "insuring the insurers." Here the co. may continue in bus. notwithstanding that it shall not under certain conditions pay its claims in full. The scheme is at once orig. and ingenious, and hence we have passed its provisions so fully under review.

At least one of the leading F. Cos. of N. Y. has placed itself under the operations of this Act—the *Continental.*

GENERAL CONSIDERATIONS.—In add. to all that has preceded, there are yet one or two other considerations which attach themselves to the Finance of Fire Ins. The first and chief of these is the sum which may be accepted with prudence *on any one risk.* In speaking of cap. in the earlier part of the present art. we have already prepared the reader to pay some regard to this point; and in this connexion it must be remembered that there exist within the countries wherein Brit. F. offices carry on their bus., towns of which it may be said, from the circumstances of their construction, or from their situation in regard to the force of the wind, or from other causes, that they *must be regarded as consisting of one risk only.*

Limits of Ins. on Individual Risks.—We are not aware that the amount which a fire ins. co. may rationally accept on any one risk has ever been made the subject of scientific discussion in Europe; although the question must be very constantly in the mind of every fire underwriter. If it were the plan of a fire office to take all its risks for the *same amount,* it would not be very material whether the limit were £1000 or £5000, because, always assuming careful selection, the prem. fund should be sufficient to pay all the losses which would arise; and pol. for larger amounts are no more expense to the office (now not even in the matter of stamps) in preparation, etc., than those for small sums: hence large lines have an advantage in this respect. But in practice the risks a fire office has to take range from £100 up to the largest limit the co. will accept. Besides, large lines on special risks are frequently much easier to obtain than small lines on first-class risks—and the large prem. is sometimes a temptation to a young office; but the "specials" have a much more decided tendency to burn.

Herein we see how an office, the bulk of whose bus. consists, say, of dwelling-house risks, which range from £250 to £1000, and perhaps average not more than £400; but which occasionally takes a heavy line on a special risk, either direct, or by way of re-insurance, places its funds in considerable jeopardy. An office doing a fair bus. in liberal lines on good risks may afford to take small lines on well-selected specials, without very much jeopardizing its finances.

We think it may be considered within the bounds of prudence that a young office—and these suggestions are submitted as points for the consideration of young F. underwriters—may write upon well-selected risks, as an outside limit, up to one-tenth of its paid-up cap. or invested assets. If it should write ten of these in any town which became destroyed by fire—apart from any smaller lines which it might have in the same place—then its resources are gone! Hence the F. underwriter has always to discriminate in regard to towns liable to be swept away by one general conflagration; and under any circumstances he will accept his larger risks on buildings or blocks as far remote from each other as the circumstance of the case will admit.

We have sought to deal with this part of the subject on its merits; but we are not without precedents at hand. In the U.S.—where F. underwriting has in times past been carried on very wildly; although at the present time it is prob. being conducted with as great regard to bus. sagacity and scientific regulation as in any country in the world—this question of limits has been carefully considered alike by underwriters, as by the Superintendents of the State Ins. Departments; and the maximum limits have been fixed by legislation in several of the States as follows:

New York.—Home and foreign cos. carrying on bus. in that State limited to 10 p.c. of cap. on single risk. The cap. in the case of foreign cos. is for the purpose of this estimate limited to the aggregate of the deposits and investments of such cos. in the several States of the Union.

Massachusetts.—Limit 10 p.c. and similar regulations.—Any excess to be re-insured.
Connecticut.—Limit 10 p.c. of paid-up cap.—Similar regulations.
California.—Limit 10 p.c. of subscribed cap.
Illinois.—10 p.c. of paid-up cap.
Indiana.—10 p.c. of paid-up cap.
Iowa.—Limit 10 p.c. of paid-up cap.—unless excess be re-insured.
Kentucky.—10 p.c. of paid-up cap.
Maine.—10 p.c. of paid-up cap.
New Jersey.—10 p.c. of cap.
Wisconsin.—Town ins. cos. not to exceed 2000 dol. on any one risk.
Ohio.—Limit 20 p.c. of paid-up cap.—unless re-insured by solvent co.
Kansas.—Limit 5 p.c. of paid-up cap.

And the States which impose no limits nearly all require that the maximum amount underwritten in any one risk shall be set out in the ann. statement of the co. There are penalties more or less severe for breach of these regulations.

Limitation of Dividends.—In Gt. Brit. the only limitation of dividends which has been practised by fire offices has been entirely voluntary, and made in view of estab. reserved funds for the purposes already noticed while speaking of these. In the U. S. other limitations have been imposed. We have seen that the cos. placing themselves under the Special Law of N. Y. State, passed 1874, are limited to 7 p.c. div. Here the object of the limitation is clear enough. In *Massachusetts* the dividends of fire offices are limited (by the law of 1870) to 8 p.c., no reason being assigned; but the obvious intention being to keep down the rates of ins. In most of the States it is enacted that no div. shall be paid while the cap. remains impaired: and that is reasonable enough. In such a case, even if a *dividend reserve fund* existed, we suspect it would be required that the cap. be made good before any portion of the fund was applied to the purpose originally designed. The integrity of the co. is made the first consideration. The cap. made good, the bal. of the fund may be applied to dividends. Several of the States have special regulations regarding dividends, different from those already spoken of; these we proceed to notice.

The Ins. Law of *Indiana* (1852, sec. 18) enacts that before any dividends declared upon the cap. stock of the co. are paid over to the holders of the same, the co. shall "retain 5 p.c. on all such div., and within 6 months thereafter shall cause the sum thus retained to be invested in solvent stocks, as heretofore provided, and deposit them with the Auditor of State. Such stocks shall be added to and constitute part of the guaranty fund, but shall not be considered any portion of the cap. stock of such co." The object of this fund being to strengthen the position of the co.

The Ins. Law of *Iowa* (1868, sec. 15) contains the following:

15. It shall not be lawful for the directors, trustees, or man. of any ins. co. organized under this Act, or incorp. under any law of this State, to make any dividends except from the surplus profit arising from their bus.; *and in estimating such profits there shall be reserved therefrom a sum equal to 40 p.c. of the amount received as prems. on unexpired risks and pol.: which amount so reserved is hereby declared to be unearned prems.;* and there shall also be reserved all sums due the corp. on bonds and mortgages, bonds, stocks and book accounts, of which no part of the principal or int. thereon has been paid during the year preceding such estimate of profits, and upon which suit for foreclosure or collection has not been commenced, or which, after judgment has been obtained thereon, shall have remained more than 2 years unsatisfied, and on which int. shall not have been paid; and in case of any such judgment the int. due or accrued thereon, and remaining unpaid, shall also be reserved. *Any div. made contrary to these provisions shall subject the co. making it to a forfeiture of their* [*its*] *charter.*

Admitting State supervision to be desirable, the thoroughness of such a regulation must be admired.

The Ins. Law of *Kansas* (1871, sec. 15) contains a like provision.

In the *Massachusetts* Ins. Law (1867, sec. 72) there is the following:

72. At each ann. meeting the directors shall cause to be furnished to the stock-holders a statement of the condition of the co., *and in making dividends shall not consider any part of the prem. money divisible until the risks for which the same was paid have absolutely been terminated.* But in making up their ann. statement they shall be required to charge the co. only such portions of the cash or notes received on pol. which are unexpired, *as would be required to insure all outstanding risks.*

In the *Michigan* Ins. Law (1869, sec. 12) the same reservations are to be made before declaration of div. as in the Iowa law already recited, subject, however, to the following proviso:

That any co. may declare div. *not exceeding* 10 *p.c.* on its cap. stock in any one year, that shall have accumulated and be in possession of a fund, in add. to the amount of its cap. stock, and of such div., and all outstanding liabilities, *equal to the amount of one-half of all prems. on risks not terminated at the time of making such div.* Any div. made contrary to these provisions shall subject the co. making the same to a forfeiture of its corp. rights, *and each stock-holder receiving it, to a liability to the creditors of such co. to the extent of the div. received*, in add. to the other penalties and punishments in such case made and provided.

By the Ins. Law of *Ohio* (1869, sec. 39) it is enacted:

Any co. heretofore organized under any law of this State, for any of the purposes mentioned in this Act, which has taken notes or obligations of its stock-holders for any portion or portions of the amount subs. by them to its cap. stock, *shall retain from any div. declared to such stock-holders, their heirs or assigns,* 50 *p.c. of such div., and apply the same as a credit upon such stock-notes until such notes shall be fully paid.*

Happily the system of stock-notes here referred to—and which was fruitful of disappointment and disaster—is now almost entirely discontinued.

In the Ins. Law of *Pennsylvania* (1856, sec. 12) it is enacted:

12. That the directors of the said cos. shall on the first Monday of Jan. and July in each and every year, declare div. of profit as to them shall appear advisable, first deducting all expenses and losses; *but the moneys received for prems. upon risks, which remain undetermined and outstanding at the time of declaring such div., shall not then be considered as part of the profits, nor divided as such, when said cos. are conducted upon the joint-stock principle.* . . . And when organized upon the mut. principle exclusively, each member shall be entitled to such a proportion of the said surplus as the cash prem. paid by such members respectively may bear to the aggregate surplus so declared. . . When said cos. shall be organized upon the stock and mut principle jointly [" Mixed" Cos.], the directors, after ascertaining the surplus as above mentioned, *shall first set aside out of the same* 6 *p.c. on the actual value of the cap. stock of the said co.*, which valuation shall be estimated by the said directors for that purpose, and the bal. shall be apportioned among the insured members and the stock-holders. . . .

The members in the Mut. Asso., as also the pol.-holders in the "Mixed" Cos., were to receive certificates declaring them to be entitled to such a proportion of the accumulated cap. [*i.e.* funds] of the asso. as should be therein named. The stock-holders to receive cash.

The Ins. Law of *Wisconsin* resembles that of Michigan, already quoted. [INS. SHARES.]

FIRE Ins. for Terms of Years, or for Lives.—It was the custom of all the early Fire ins. offices in Gt. Britain to insure for terms of years, as we shall hereafter see. [Fire Ins., Hist. of.] In process of time, however, the practice settled down into a contract *annually renewable*, as far more convenient in the great majority of cases. Long practice, indeed, had shown that there were some advantages in the former system. At a later date a fresh modification was introduced, rendering it possible *to insure during the continuance of any single life, or number of lives.*

This latter feature was introduced, and the former re-introduced, by the *Beacon*, founded 1821 ; and the arguments used to prove the advantages of the respective methods were the following :

> Where estates are held during the existence of an individual, or for any given number of lives, the proprietor is compelled to insure from year to year, being unable to fix any definite period, for which a further contract should be made. The owners of property, therefore, of the description just stated, are reduced to the necessity, either of annually renewing the policy themselves, of employing an agent to do so, or of trusting to their tenants—whose neglect might prove ruinous to the interest of the proprietor. Frequent instances have occurred of loss sustained under such circumstances; it is therefore of the first importance that persons holding property, whether for terms of years or lives, should have the option of securing the same during the whole continuance of their interest therein. And for this purpose the Co. have had tables calculated, showing the amount of prem. requisite to ins. property, during either a term of years, or the continuance of 1, 2, or 3 lives.

Here is the T. of prems. for £100 for ins. of houses and buildings and goods therein by one payment under the then classification :

Years.	On Dwelling Houses and Furniture therein.	On Shops and Warehouses and Contents.	On Dwelling Houses and Contents Hazardous.	On Shops and Warehouses and Contents Hazardous.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1	0 1 6	0 1 9	0 2 7	0 2 9
2	0 2 10	0 3 3	0 4 3	0 5 2
3	0 4 2	0 4 10	0 6 11	0 7 7
4	0 5 5	0 6 3	0 8 11	0 9 10
5	0 6 6	0 7 7	0 10 10	0 11 11
6	0 7 8	0 8 11	0 12 9	0 14 0
7	0 8 9	0 10 1	0 14 6	0 16 0
8	0 9 9	0 11 5	0 16 3	0 17 11
9	0 10 9	0 12 7	0 17 11	0 19 9
10	0 11 7	0 13 7	0 19 4	1 1 3
11	0 12 6	0 14 7	1 0 10	1 2 11
12	0 13 4	0 15 7	1 2 3	1 4 5
13	0 14 1	0 16 6	1 3 6	1 5 10
14	0 14 11	0 17 5	1 4 10	1 7 4
15	0 15 7	0 18 3	1 6 0	1 8 7
16	0 16 4	0 19 0	1 7 2	1 9 11
17	0 16 11	0 19 9	1 8 3	1 11 1
18	0 17 7	1 0 6	1 9 3	1 12 3
19	0 18 2	1 1 2	1 10 3	1 13 3
20	0 18 9	1 1 10	1 11 2	1 14 3
21	0 19 3	1 2 6	1 12 1	1 15 4

These sums exclude the Gov. duty, but columns were added including the duty.

Here is an abstract of the T. of prems. (in one payment) per £100 for ins. against fire *during the existence of one life*, no duty included :

Age of life at time of ins.	On Dwelling Houses and Furniture therein.	On Shops and Warehouses and Contents.	On Dwelling Houses and Contents Hazardous.	On Shops and Warehouses and Contents Hazardous.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
11 to 12	1 4 11	1 9 1	2 1 7	2 5 8
15 ,, 16	1 4 5	1 8 6	2 0 8	2 4 9
20 ,, 21	1 3 7	1 7 6	1 19 4	2 3 3
25 ,, 26	1 2 10	1 6 8	1 18 0	2 1 10
30 ,, 31	1 2 0	1 5 8	1 16 8	2 0 4
35 ,, 36	1 1 1	1 4 8	1 15 2	1 18 8
40 ,, 41	1 0 1	1 3 5	1 13 5	1 16 9
45 ,, 46	0 18 10	1 2 0	1 11 5	1 14 6
50 ,, 51	0 17 6	1 0 5	1 9 2	1 12 1
55 ,, 56	0 16 0	0 18 8	1 6 7	1 9 3
60 ,, 61	0 14 3	0 16 7	1 3 9	1 6 1

The T. applying to 2 lives was more complicated, and an example must suffice. Suppose a person wished by one payment to effect an ins. on a private dwelling non-hazardous, held during the continuance of two lives, one aged 20 and the other 40 years, the rate would be £1 5*s.* 11*d.* per £100. For risks of the second class £1 10*s.* 3*d.*; of the third class £2 3*s.* 3*d.*; and of the fourth class £2 7*s.* 6*d.*

The T. applying to 3 lives was still more complex. We give one example. Suppose the risk to continue during the existence of either of 3 lives, and the ages at starting to be 10, 10, and 10. The rate by one payment to insure £100 on a risk of the first class would be £1 9*s.* 5*d.*; of the second class £1 14*s.* 4*d.*; of the third £2 9*s.* 3*d.*; and of the fourth £2 13*s.* 11*d.* Or suppose the ages to be 10, 10, and 40, the rates would then be £1 8*s.* 9*d.*; £1 13*s.* 6*d.*; £2 7*s.* 10*d.*; and £2 12*s.* 8*d.* Or suppose the ages to be 10, 50, 60, then £1 6*s.* 6*d.*; £1 10*s.* 11*d.*; £2 4*s.* 2*d.*; and £2 8*s.* 7*d.* The duty is not included in any of these cases.

FIRE INS. FRAUDS.—See INS. FRAUDS, FIRE.

FIRE INS., GOVERNMENTAL.—See FIRE INS., MUNICIPAL.

FIRE INS., HISTORY OF.—No attempt has heretofore been made to write a detailed hist. of F. Ins. Nor is this much to be wondered at; for the materials are not only very scant, but lie scattered; and when brought together are in some important respects conflicting. A patient investigation of the earlier steps in the progress is therefore a necessary condition. The more generally received notion that F. Ins. owes its origin to the Great Fire of Lond. 1666, is based upon an imperfect survey of the facts.

The first glimmer of the principle of mut. ins. arises in connexion with the Anglo-Saxon gilds, wherein the members made fixed periodical payments towards a common fund, whereby they secured each other against loss from "fire, water, robbery, or other calamity." Here we have an acknowledgment of the necessity of protection against fire, and an indication that the only means of protection available was by this means of mut. association for common objects of protection. It is important in this connexion briefly to note that gilds appear to have been very common among the ancient Greeks and Romans; and their objects were almost identical with those of the gilds of the Anglo-Saxons of later date. [GILDS.]

Under title FIRE BRIEFS we have shown the system which was pursued in regard to large fires and other calamities, in making an appeal to the nation at large through the clergy and the parish churches. This might at first sight be taken as an indication that no means of protection against the consequences of fire existed. The deduction would not be sound, for the reason that the system of F. briefs, with all its attendant abuses, continued long after F. Ins. had become estab. as a recognized branch of bus. But the system of contribution, which was voluntary and eleemosynary in Gt. Brit., was *compulsory* in some neighbouring countries; and we have to examine the practice therefore as part of our subject.

1240.—By Art. XI. of the Law—*Cora*, or *Keure*, as it is termed—promulgated by Thomas, Count of Flanders, and Johanna his Countess, this year, there is recited the following community of liability, known as the custom of *Furnes*: "In quacunque villa combustio facta fuerit occulte, tota villa statim solvat damnum per illos quos eligent coratores; quod si malefactor sciri poterit, bannietur perpetuo, et solvetur damnum de bonis ejus; residuum vero cedat comiti. Qui vero de nachbrant acclamatus fuerit, per quinque coratores purgare se poterit; alioquin suspendetur, omnia bona sua erunt in gratia comitis, restituto prius damno illi qui damnum habuet: si prius tamen querimoniam fecit," which may be rendered as follows: In whatever house a fire shall have been secretly made, the whole place instantly makes good the damage through those whom the guardians select; but if the malefactor can be found out, he is banished for ever, and the damage is made good out of his property; the residue indeed he yields up to the court. Truly he who can exculpate himself from the accusation will be commended by those guardians; but until he can do so he is suspended. All his goods will be in the pleasure of the court: the damage being first restored to him who has the injury; if, however, he has first made complaint, *i.e.* given due notice.

Mr. F. Hendriks considers it "a fair query, whether the advanced and well-advised laws of compensation for fire, embodied in the foreign codes, are not the development of the ancient *Coutumes* under that title?" These "Coutumes" the reader will be made familiar with in our hist. of MARINE INS. Under title FIRES CAUSED WILFULLY, we shall trace the growth of the law on that subject.

1609.—Beckmann, in his *Hist. of Inventions*, etc., says: "It is perhaps known to few, that even in the beginning of the 17th century a proposal was made by some ingenious person, that all the proprietors of land *should insure the houses of their subjects against fire*, on their paying so much p.c. annually on the value of them. The author of this scheme presented it to Count Anthony Gunther von Oldenburg, in the year 1609, *as a means of finance not to be found in any work printed on that subject.*"

Beckmann drew his facts from Winkelmann's *Oldenburgischen Friedens—und der benachbarten Oerter Kriegshandungen*, 1671 (fo. p. 67), wherein it is recorded that the original proposer in his plan said that, "as many fires happened by which a great number of people lost their property, the Count might lay before his subjects the danger of such accidents, and propose to them, *that if they would, either singly or united, put a value on their houses, and for every hundred dollars valuation pay to him yearly one* *dollar, he on the other hand would engage, that in case by the will of God their houses should be reduced to ashes, the misfortunes of war excepted, he would take upon himself the loss, and pay to the sufferers as much money as might be sufficient to rebuild them;* and that all persons, both natives and foreigners, who might be desirous of sharing in the benefits of this institution should not be excluded. The author was confident that, though the damage might fall heavy at first, a considerable sum would be gradually raised from year to year, and that every one might thus insure his house against accidents. He had no doubt that it would be fully proved, if a calculation were made of the number of houses consumed by fire within a certain space in the course of 30 years, that the loss would not amount by a good deal to the sum that would be collected in that time. *He did not, however, advise that all the houses in every town should be comprehended, as the money claimed might amount to too much;* but only that some and certain houses should be admitted into this association."

The Count's reflections upon the plan are reported to have been as follows: "It is to be considered what sum every proprietor of land may with certainty raise and receive; whether the proposed plan can, to the undoubted benefit of the subjects, and the advantage of their lord, be honourably, justly, and irreproachfully instituted without tempting Providence; without incurring the censure of neighbours; and without disgracing one's name and dignity. In the next place, that this institution may not have the appearance of a scheme to bring money into the country; and still more that it may have no resemblance to a duty, tax, or impost, but rather to a free contribution, or constrained remuneration for being insured from danger, and by which losses being made good, houses can be sooner rebuilt, and put in their former condition."

Finally, the Count allowed that the object of the plan was good—considered in every point of view—and that a Company composed of common individuals might be formed to insure each other's houses, and pay the losses sustained by fire; but he concluded, that if he undertook the plan, Providence might be tempted; that his own subjects might be displeased; and that improper ideas being formed of his conduct, he might be accused unjustly of avarice. "God," he said, "had without such means preserved and blessed for many centuries the ancient house of Oldenburg; and he would still be present with him, through His mercy, and protect his subjects from destructive fires." He dismissed, therefore, the ingenious author of this plan, but not without rewarding him according to his usual liberality.

This scheme, which the religious scruples of Count Anthony caused him to reject, we think took root in other quarters very soon afterwards. We do not indeed find any immediate evidence of this; but a reference under date 1662 appears to confirm this view.

1633.—At a "Wardmote Inquest" held this year in Lond. especial attention was drawn to the importance of providing appliances in the City of Lond. "for avoiding the peril of fire"—see FIRE BRIGADES for account of early measures in this direction.

It was in this year that *Fire Engines* were first introduced into Lond. from Holland—see FIRE ENGINES, MANUAL, under which head will be found several accounts of the working of these engines at an early period; and under date 1637 is given a letter from King Charles I. to the "Lord Mayor and Aldermen of the City of Lond.," calling their attention to the importance of providing *Fire Engines* in the City and the several parishes "neare thereabouts." (See 1688.)

1635.—Returning from continental Europe to Gt. Brit., we find that during this year the following petition was presented to King Charles I.; but strange to say, the name of the petitioner does not appear even upon what purports to be the original which is preserved in the Record Office. The document runs as follows:

To the King's most excellent majesty—The humble Petition of ——— Humbly showeth, That there frequently happening great and lamentable losses by Fire to divers your majesty's subjects, to the utter undoing themselves and families, as also much trouble to your majesty by petition for obteyning your majesty's gracious favour for gathering of reliefe by Briefes, being a continuall charge to the subject, and often not without abuse. For the future prevention whereof, upon your majesty's gracious favour extending to your petitioner, under the greate seale of England Authorising your petitioner to ensure all your majesty's subjects whomsoever for soe much of their estates combustible as they themselves shall conceive in danger of Fire, not taking above 12*d.* per centum, yearly for soe much soe insured, And giving such securitie to your majesty's said subjects as they shall like of, paying your majesty for the first two years £—— [figures partly worn away] And £500 p.a. during the terme graunted from your majesty: upon not performing whereof your said graunt to cease. Your petitioner therefore humbly prays your majesty will graciously please to give your Royal directions to Mr. Attorney Generall for the preparing a Booke [Patent] for your majesty's royal signature. And your humble servant, as in duty bound, will ever pray for your majesty.

It may have been that this was a sort of orig. draft submitted to H.M.'s advisers in view of ascertaining if the presentation of such a petition would be permitted. This view is, we think, sustained by what follows.

1638.—The following petition was presented to Charles I.: To the King's Most Excellent Majesty,—The humble petition of William Ryley, one of your majesty's servants, and of Edward Mabb, gent., Sheweth that whereas there have been and are dayly many great losses by the lamentable fires hapned in and about the Citty of Lond. as by late experience hath appeared to the inhabitants thereof: for prevention whereof (by the help of God) your majesty's petitioners present the propositions hereunto annexed, humbly praying that your majesty will graciously please to grant a pattent for the sole ordering and disposing of the same for the term of 41 years, according to the propositions hereunto annexed. And as in duty bound, etc.

The propositions were as follows:

Propositions touching the prevention of fires in London and the parts and suburbs thereof. The owners or inhabitants of houses within the City and suburbs of Lond., together with the Citty of Westminster and Borrough of Southwake, paying 12 pence per ann. for every house yielding £20 yearly rent, if more or less after the rate of 12 pence yearly for every £20: shall have his house or houses re-edified according to His Majesty's proclamation, and sett in as good or better state as they were before in case any loss or casualtie by fire shall happen unto them. For security hereof there shall be deposited £5000 into the Chamber of Lond. which shall continually lay wholly and entire to receive for int. £5 in the £100, which increase shall runne untill it shall amount to £10,000. And there shall also be kept a continual watch in all parts of the Citty and suburbs all night, that if any fire should break forth it may presently be espied. And engines shall be made and kept in every ward thereof to be ready at hand for the quenching of the same, and the watch brought speedily to the fire, and those severall watchers in every ward shall speedily repayre themselves to assist where the fire shall be. Reserves of water shall be made in convenient places for sudden use.

From hence will arise great profitt, comfort and safety to the inhabitants and to their landlords, for many times a poor man's house is burnt, being all his livelihood, being not able to buyld it again, and soe utterly undone, whereupon divers briefs are granted, which by this means would be prevented. And if any house be on fire, the terrour thereof causing the neighbours adjacent to cast their goods into the street, whereby they are exposed to great loss which shall be guarded by the watch, or which by God's blessing and this extraordinary care may be much prevented. Besides in regard of the continual watch which shall be going through all the streets and lanes, etc., will hinder ill-disposed persons from breaking into houses and warehouses, and also prevent many murthers and other harms which befall many in the night time. And there shall also be allowed £200 p.a. towards the rebuilding the steeple of Saint Paules Church until finished.

We are informed that: "Att the Court at Whitehall, 1st May, 1638, His Majesty is pleased to refer this petition to Mr. Attorney-General, who is to consider thereof, and of the proposition annexed, and certify His Majesty his opinion of the business; whereupon His Majesty would signify his further pleasure."

On the 4th August, 1638, Mr. Attorney-General does report as follows:

"May it please your most excellent Majesty, according to your Majesty's direction I have considered of this petition and propositions annexed: And whereas it is proposed that the owners or inhabitants within the Citty and suburbs of Lond., together with the City of Westminster and Borrough of Southwark, paying 12*d.* p.a. for every house yielding £20 yearly rent, if more or less after the rate of 12*d.* yearly for every £20, shall have his house or houses re-edified according to your Majesty's proclamation, and set in as good or better state as they were before in case any loss or casualtie by fire should happen unto them, I doe humbly consider the said propositions reasonable if the petitioners according to theyre offer be tyed to theyre limytations, and that no man be pressed to come in to subscribe, but every man left to his voluntary choyce; £5000 to be deposited to runne on at 5 p.c. untill it be £10,000, and the houses to be re-edifyed with other moneys, and the buyldings to be made in convenient time, and in a due manner according to His Majesty's proclamation. That watches and engines be kept in every ward and reserves of water in several convenient places; £200 p.a. towards the repair of St. Paul's Church until it be finished—All which I humbly submit to His Majesty's great wisdom. (Signed) Jo. Bankes."

And now the King's pleasure: "Att the Court att Whitehall, 16 Oct. 1638—His Majesty is pleased to grant the Petitioners a Pattent according to their petition, and propositions, with the limitations in this certificate mentioned; and Mr. Attorney General is forthwith to prepare a Bill for his majesty's signature accordingly, for which this shall be his warrant."—(Signed) Fran. Windebank.

We do not find any further trace of this measure at this time, probably in consequence of the troubles between the King and Parl., which, however, did not come to a "head" until some years later.

1660.—Soon after the Restoration which placed Charles II. on the throne this year, a scheme of Fire Ins. was set on foot by "several persons of quality and eminent citizens of London." Proposals were printed after the manner of the period; and the King commended the project to the attention of the Common Council. But the project was rejected by that body *on the ground that they thought it unreasonable for private persons to manage such an undertaking, or that any one but the City should reap the profits of the enterprise.*

This appears to us to lead strongly to the inference that F. Ins. was being carried on as a scheme of municipal finance in some part of Europe.

Magens, in his *Essay on Insurances*, first pub. at Hamburg in 1753, says: "At Hamburg there is a 'Fire Casse' of *long standing*, wherein the principal houses are insured at the value of 15,000 marks (about £1000), to be paid in case of their being burnt."

1662.—In a quaint pamphlet entitled: *A Treatise of Taxes and Contributions*, pub. in Lond. this year, we find the following allusion to Fire Ins.: "Like the ensurance in some Countreys of Houses from Fires for a certain small part of their yearly Rent." The pamphlet was pub. anonymously, but was evidently from the pen of a well-informed writer. The two lines here quoted appear to us to estab. two facts: the first, that F. Ins. *did not exist in Gt. Brit.*; the second, that *it did exist elsewhere.* This is in entire conformity with the conclusions to which the preceding facts point.

1666.—This is an important land-mark in the hist. of F. Ins. On the 2nd September occurred what we now know as the "*Great Fire of Lond.*" That this event led to important developments in regard to F. Ins. is well known. The precise nature and extent of these developments require some investigation, which we proceed to make.

1667.—Haydn, in his *Dictionary of Dates*, says ins. of houses and goods in Lond. began this year: "An office was then set up for insuring houses and buildings, principally contrived by Dr. Barton [Barbon], *one of the first and most considerable builders of the City of Lond.*" The Dr. Barbon [not Barton] here referred to is stated on very good authority to be a "direct descendant" of Praise-God Barebones of the Protectorate. We hear of him again as we proceed.

An office being set up by one man means individual underwriting, the same as had been practised in regard to Marine, Life, and some other branches of Ins. There is no reason why Fire underwriting should not have been carried on in this form—even the smallness of the prem., which would now be a reason against it, did not then prevail. But on the other hand, there was no reason why this mode of ins. should not have been in use long before this period. London had sustained several large fires previously; and the inhabitants of the City lived in constant dread of its recurrence, as we see by reference to the schemes already projected, and as will be made more clear under title FIRE PROTECTION. This point requires further investigation.

Mr. Beckmann, in his first paragraph on this branch of the bus., opens as follows—he having been previously treating of Marine Ins.: "A most useful imitation of ins. in trade is the institution of ins. offices to indemnify losses sustained by fire. So far as I have been able to learn, companies for that purpose were first formed towards the middle of the last century [he wrote in 1781]; *though houses were insured by individuals much earlier.*" If his surmises be correct, there must be an earlier hist. of F. Ins. than that which we have here recorded. We have no means of reference to the orig. ed. of his work; and the error may lie with one of his several translators and editors. [We quote Bohn's ed. 1846.] The first F. office in *France* was estab. in Paris in 1745; the first in *Germany*, at Hanover, in 1750.

In *Holland* the system of individual writing of F. pol. was in very general use early in the last century; and in the Ins. Ordinance of Amsterdam under date 1744, a form of pol. is provided to be used in such cases. This we have given under AMSTERDAM, INS. ORDIN. OF.

Mr. Lewis Pocock, F.S.A., in his *Familiar Explanation*, etc., pub. 1842, tracing the early development of ins., says (p. 91): "The next employment of the principles of ins. was their adaptation to the indemnifying of losses sustained by fire; which, however, does not appear to have generally prevailed until the end of the 17th century, *though houses were insured by individuals much earlier.*" He clearly follows Beckmann.

Mr. W. T. Thomson, in his *Proof Sheets*, 1856, says (p. 5): "Fire Ins. might have been suggested by Marine Ins., but was not at all likely to precede it, seeing that the accident of fire—generally devastating in its effects in those early days, and arising from carelessness—would not appear so susceptible of being brought under the law of average in the same way as the dangers of the sea: the results of which would appear by single events proceeding from natural and known causes."

Mr. F. G. Smith, in the art. "Fire Ins." in the 8th ed. of the *Encyclo. Brit.*, says: "Considering that marine ins. was well known and ins. on life understood and practised to a certain extent in several mercantile countries by the middle of the 16th century, it appears extraordinary, when we call to remembrance the devastations and distress occasioned by fire in this country, that some means should not have been adopted at an earlier period to render such calamities less ruinous to individuals, particularly when a plan which appears eventually to have formed the basis of the present ins. cos. was suggested so early as 1609."

Prof. Anderson Kirkwood, after a careful investigation of the subject [*Lectures*, 1874], says: "The more likely origin of F. Ins. was a felt necessity, produced by the Great Fire of Lond. in 1666." He says further: "*Mutual F. Ins. Clubs granting ins. not exceeding £500 on a single risk began to be formed the year after the fire, and continued for several years thereafter.*"

Mr. D. A. Heald, the able Vice-President of the *Home* Fire of N. Y., in the interesting art. "Fire Ins." in *Hines' Ins. Bluebook for* 1874, says: "The early hist. of F. Ins., if indeed it can be said to have had any well-defined existence before the Great Fire of Lond. in 1666, is involved in much obscurity. It seems to be an admitted fact that the practice of individual underwriting prevailed at a much earlier date among the Lombards in *Italy*, and the merchants of the commercial and free cities bordering on the German Ocean. *This form of underwriting, being of a personal or private character, has left little or no evidence of its existence,* much less of the principles on which it was conducted, or the results obtained by the underwriter."

The preceding review of the authorities does not help us very much in regard to actual facts, but it does tend to strengthen the surmise that individual underwriting of fire risks may have been practised in Europe, and perhaps in Gt. Brit., prior to 1666. The apt remark of Mr. Heald, that this form of underwriting does not leave much trace of its existence, has to be kept in mind; on the other hand, it is quite remarkable that none of the many accounts of the Fire of Lond. should have mentioned the fact of the existence of any such ins. The more unusual they were, the more likely they were to be mentioned; and if they had been at all general, the fact of Mr. Barbon opening an office for the purpose in the year after the fire would not have occasioned so much comment. Again, the law-books generally reveal the existence of contracts of this sort, for disputes will arise. But while numerous cases in regard to marine individual underwriting occur before this date, and some as to life ins. contracts, we cannot, after a painstaking search, discover any such case in regard to F. Ins. *On the whole, then, we are compelled to regard the belief in individual underwriting of F. risks in Gt. Brit. before this date as extremely doubtful.* We now pursue our history in chronological sequence.

1668.—Early in this year, or perhaps towards the close of the preceding, a gentleman named Delaune, or De Laune, put forward some "proposals" for ins. against fire. These appear to have occupied the attention of the citizens, who brought the subject before the Court of Common Council, with what results will duly appear. But nothing at the moment was done, and for the simple reason that the City had to be rebuilt before it would be ready for any scheme of ins. The measures which were taken in view of rebuilding the City will be referred to in some detail under FIRE PROTECTION.

1669.—The first mention of Delaune's scheme in the records of the City occurs this year. Thanks to the Lord Mayor, the Chamberlain, and other officers of the Corp., we have had access to these records, and propose to bring into daylight for the first time many details of historic interest. Thus at a Court of Common Council held 8th Dec. 1669, it is recorded as follows:

> The Petition of divers Citizens touching Proposals made by Mr. Benjamin Delaune for Ensuring Houses against the evill and loss of Fire within the City and liberties for the future being read, togr. with the same Proposals, and well considered, this Court gave thanks to the said Petitioners and author of the said Proposals for their pains and studies in that affair, and did order that the same Proposals be taken into & considered accordingly the first Common Council after Xmas next.

The next Court of Common Council met on the 19th Jan., 1669 [Old Style], and the following is the record:

> This Court doth refer the consideration of Mr. Delaune's Props. touching the Ensuring of Houses against the evill & danger of Fire to the next Common Council.

On the 24th Feb. [1669 Old Style, 1670 New Style], the matter came forward again, and a Committee being appointed for various purposes then discussed, it is recorded:

> This Court doth also refer unto the same Committee the consideration of the Proposals about the Ensuring of Houses against the evill of Fire, who are desired fully to consider of the same now and report to this Court their opinions thereon.

We think it more than prob. that this last para. related to another set of "proposals" different from Delaune's, and prob. brought forward by Mr. Deputy Newbold, of whom we shall hear much more as we proceed.

1670.—We have seen it stated—but upon what authority we know not—that an asso. for friendly ins. against fire, consisting of a number of private contributors agreeing to ins. each other, was founded at *Edinburgh* this year.

1672.—We hear nothing further of the action of the Committee of the Common Council at present. It is indeed certain that the Great Fire, following immediately after the Great Plague, had in a great measure prostrated the energies as well as the resources of the City. Men's minds had become unsettled by this double misfortune. We find a petition from the Lord Mayor to the King under date this year, wherein he speaks of the ill effects of the Plague and the Fire, and prays that "His Majesty may be pleased to extend a helping hand to re-establish the City of Lond. in its pristine glory and magnificence."

During this year there was pub.: *Proposals moderately offered for the full peopling and inhabiting the City of Lond., and to restore the same to her antient flourishing trade, which will sute with her splendid structure.* By Londinophilus. And in a postscript thereto the writer says:

> If this my Essay or proposals, pub. out of my Zealous Well-wishes to the future happiness of this antient renowned and honorable City, shall attain to its desired success, it will be an encouragement to me *to speed the publication of certain papers, upon serious consideration orderly designed for the prevention of Fire; and the office of Ensurance of Houses and Goods from Fire*, at the rate of £1 p.c. Rent p.a., which hath for several months been seriously debated with very many judicious persons within this City.

The original of this curious document is in the British Museum.

1674.—The scheme of Mr. Deputy Newbold regarding F. Ins. (already referred to under date 1669) was brought prominently forward this year [Mayoralty of Sir Wm. Hooker], and created much discussion in the City. He, being a prominent member of the Corp., had every opportunity of keeping his own proposals well in view; while those of Delaune appear to have been kept systematically in the shade. The prob. reason for this will, we think, be developed as we proceed.

1675.—It appears that during this year Mr. Deputy Newbold presented a petition to the Lord Mayor, Aldermen, and Common Council, embodying the chief features of his scheme. This was probably in the mayoralty of Sir Robert Vyner. We do not find any trace of this petition on the Corp. records. We believe it embraced the following proposition: There are 12,000 new brick houses in the City, of the average value of £250. These insured at 3 p.c. would produce a fund of £90,000. The ann. int. upon this at 6 p.c. would be £5400. The loss amongst these houses, one year with another since the fire of London, had not amounted to £400 p.a.; so that, allowing £1000 p.a. for charges, "the profit to the City by this designe is £4000 p.a."

We have it upon contemporaneous authority that Mr. Newbold retain'd Mr. Mosyer as his chief counsel, in order to present it to the City, and gave him a fee of "above four pound." But the hands of the City "were so full of other business, that though they had a strong inclination, yet they had no leisure to carry on this design."

1678-9.—Mayoralty of Sir James Edwards. Mr. Deputy Newbold presented by way of petition a remodelling of his scheme. This, too, seems to be absent from the Records of the Corp.; but from other sources we present an outline of the contents:

It (the petition) adverted to the custom of Marine Ins., which it said *had been carried on for many ages*. The proposition of the petitioner was, that as there were 12,000 new brick buildings in the City, which might one with the other be estimated at the value of £250 each, 5 p.c. upon which would be £12 10*s*. each house; that if only one-third of the number were insured, a fund of £50,000 might easily be raised. This assurance, the petitioner stated, "will be purchased at an easy rate to the relief of the widows, orphans, aged poor, and such as are incapable of labouring." He argued that a house insured was esteemed a good settlement in marriages for the provision of wives and children; *that such houses should be insured by the Corporation at periods varying from one year to one hundred years;* and finally, he submitted for the approval of the Court of Aldermen a table of terms of ins.

1679.—Towards the close of this year (Mayoralty of Sir Robert Clayton) Mr. Newbold enlarged his scheme into a pamph., bearing the following title: *London's Improvement and the Builders' Security Asserted, by the apparent advantages that will attend their easie charge, in raising such a Joint-Stock as may assure a Re-building of those Houses which shall hereafter be Destroyed by the Casualties of Fire.* The dedicatory preface says: "The design it brings with it is chiefly for the improvement of the City buildings, *by proposing a way for the raising such a joint-stock as may assure the rebuilding of their casualties happening by fire. The undertaking seems so great and hazardous, that a million pounds sterling may be expected with it, to make it practicable, to the satisfaction of the several persons interested.*" The pamph. itself commences thus:

> The several fruitless attempts that have been made in projecting a design for assuring the building of houses burnt down, may be some discouragement to offer more on that subject. But this being well approved of by many, to carry nothing with it but the common and public good, after some years lying by, is at their importunity now exposed to a more general censure. . . . Reason and experience, which hath introduced and continued the custom of assurances amongst merchants, will direct the like security to be admitted of for rebuilding and repairing the casualties of houses by fire to those proprietors and inhabitants: both being adventurers at a hazard, though in a different kind and element. And though the late new brick buildings in the City of London are reasonably well defended by their thick party-walls, yet by sad experience we find each particular man's interest in those inclosures is, by the effects of a small spark misplaced, still lyable to be carried away with a flame: and when such an accident of fire shall happen to lay level the subsistence and income of the inhabitant and proprietor (who is not in a position to rebuild those casualties), those candle-rents to such are little better than for ever extinguished.

The working part of the scheme was as follows:

> *First*, that which will make the design practicable at an easy rate and charge must be the mutual agreement of a considerable part of the inhabitants and proprietors to become adventurers in raising the joint-stock for discharge of the undertaking: many hands contributing, lightens the loss, and gives ease in the charge of rebuilding and repairing. Upon a moderate calculation of the City new brick buildings, and their late years casualties by fire, if but one-third part of those inhabitants and proprietors should make their subs. of 5 p.c. according to the value of their houses or rebuilding, a joint-stock of £50,000 might be raised amongst themselves for carrying on this design. We will believe there are not less than 12,000 houses of the new brick buildings in the City of London. These, one with the other, may be esteemed in their value or charge of rebuilding at £250 per house—which at 5 p.c. will be £12 10*s*. on each house. So that 4000 houses (the third part of those houses at £12 10*s*. per house) will amount to £50,000. But should subs. be made of only £2 p.c. for the whole number of those 12,000 houses, in proportion to their said value, a joint-stock of three score thousand

> pounds might be raised amongst themselves for discharge of the undertaking. And in probability such a stock with the improvement, might for ever perpetuate the rebuilding of all the casualties by fire happening to those adventurers. And as it may be employed, in few years they may receive dividents out of the improvement. So that a perpetual assu. for a rebuilding, etc., to be made by a joint-stock, raised in proportion to the value of the houses, will be found to be more advantagious, and purchased at a much easier charge, or *premio* to the adventurers, than should such an assu. be undertaken for one year's time by a private hand.

This last remark clearly points to the fact that F. Ins. was at that date being carried on by individual underwriters [Dr. Barbon, and prob. others]. The document proceeds:

> *Secondly*, this joint-stock thus to be raised for discharge of this undertaking, will cause a mutual participation of rejoycing one with another in their preservation; and will be a comfortable relief, and a secured reparation in case of future demolishments. And undoubtedly this security, as it will be an easy purchase, so it will be more safe and satisfactory, and more acceptable to them, *than should any other assu. be attempted to be set on foot by a private hand*, and tending to a private profit.

In no other respect than as here set out was the asso. to be mutual; and in this respect it differed from many other projects of the period. It was proposed to petition His Majesty for a Charter of Incorporation, and many more conditions were appended to the proposal.

It will appear clear from the foregoing that the matured scheme of Mr. Newbold was not framed with the view of its being taken up by the Corp. of Lond., but by a joint-stock corp. We have it upon authority, indeed, that it was the Lord Mayor, Sir Robert Clayton, who, approving of the project, *desired that it should be managed by the Chamber of Lond.* And the same was in the following year tendered to the Common Council by Sir Patience Ward, the then Lord Mayor.

1680.—This year constitutes an important epoch in the hist. of F. Ins. We must now leave the Corp. of Lond. and Mr. Deputy Newbold for a short time, and turn our attention in other directions. While some of the events we have recorded were going forward, Mr. Samuel Vincent, Dr. Nicholas Barbon, John Parsons, Felix Calvert, and others, were actively engaged in developing another project, which we may fairly assume was a reconstruction of Dr. Barbon's office opened in 1667: the more so that was it designated *The Fire Office.*

The coming events were casting their shadows before, in the shape of short paragraphs in the newspapers of the day. The first we meet with appeared in the *Protestant* (*Domestick*) *Intelligence* of Friday, 2nd April this year, and is as follows:

> An eminent citizen lately presented to the present Lord Mayor, Sir Robert Clayton, a copy of a design (directed to his Lordship, the Court of Aldermen, and Common Councilmen of the City of London) asserting the easie charge of raising such a joynt-stock as may for ever assure the rebuilding of any the casualties happening by fire to any of the houses of the City of London. The design is promised in a short time to be pub. for a more general satisfaction to all that may be concerned in houses, when it will appear that upon a moderate calculation of the value of the late new brick buildings, if but one-third part of those inhabitants and proprietors should make their subs. of £5 p.c. according to their said value (or charge of rebuilding), a stock of £50,000 might be raised amongst themselves, which in all probability may be so imployed that the improvement thereof may for ever rebuild all such casualties as may happen by fire to those houses and buildings.

The next is of greater significance, and appeared in the *True Protestant* (*Domestick*) *Intelligence* of 7th May, 1680, as follows:

> There is a new office to be kept at the backside of the Royal Exchange, London, and will be opened on Thursday next. They do undertake for a very reasonable rate to secure the houses in London and the suburbs thereof from fire, and if burnt down to build them again at the cost of the office, for which end is provided a considerable bank of money, and a fund of free land, to such a value as will secure those that agree with the office. There being now in print a particular thereof, we need not give you any further account.

The *Mercurius Civicus* of 12th May, same year, contained a proposal for insuring houses from fire at "an office in Threadneedle Street."

The managers of the "office on the backside of the Royal Exchange" pub. this year the following "Arguments for Ins. Houses from Fire":

> Since the propositions for ins. houses from fire at *sixpence per pound rent* for brick houses, and twelvepence for timber: for which £100 is to be paid out of the bank of the office for every £10 that is insured, or else the house to be rebuilt at the charge of the office; as is at large expressed in the printed propositions; hath received approbation from many persons of great reputation and considerable owners of houses, as appears by their subs.; which is sufficient to encourage the undertakers to prosecute their designs; and therefore need not use any new arguments to promote its success. Yet because at the first proposing of this design it was promised to be so managed, that it might give all possible satisfaction; it might therefore be expected that this subject of *insuring houses from fire* should be more fully and largely discours'd of: upon that account this paper is pub. *to show the certainty of the propositions, the easiness of the terms, and the interest of either landlord or tenant to ins.*
>
> To show the certainty of the propositions; which brings credit to this design; it is necessary to inquire what certainty human affairs are capable of; and what is the cause of credit. There are two suppositions upon which all credit is founded: *interest* and *ability*. By the first is meant, That the undertaking or design intended is supposed to bring profit and advantage to the undertakers; for no credit will be given to that designe, by which all agree there will be loss: there is no interest oblig'd to maintain it. By the second, That there is a stock or bank to carry on such a designe; which is sufficient and large enough to satisfy the credit that is given to it.
>
> Upon these two suppositions all the public banks have credit; as the *East India* Co., the *African* Co., and many other public banks: And humane affairs are not capable of a greater certainty than from these two suppositions, when ability and interest are both bound for performance.
>
> As to the first, That the designe of ins. houses from fire may be profitable to the undertakers, will be

(as is usual to most undertakings) granted, unless the contrary be obvious; upon this presumption, that persons will not engage in any designe without expectation of profit. Upon this supposition alone half the trade of the nation is driven: for men in dealing, are trusted with greater quantities both of moneys and goods, than the lenders or dealers suppose them to be worth: They believing there will be in management of the money, or retailing of goods, such profit as will pay the lender, or dealer, the principal, with advantage to the borrower or retailer. But in all public designes, there is required a bank or stock, as well as credit, from the profit of the designe.

The bank, fund, or stock (which are all the same thing: for where there is either land or goods there will be money) of this designe is £40,000, for the insuring of 10,000 houses; with the add. of £20,000 for every 10,000 houses that shall be from time to time insured; though £10,000 (which was at first proposed) had been large enough: But because some persons seemed to question it, it is agreed by the undertakers to add £20,000 for every 10,000 houses.

That this fund of £40,000 is sufficient to insure 10,000 houses and will always continue so, must be granted; unless a fire happen so great as to destroy the whole £40,000 at one loss. For it will be in the interest of those concerned in the office to support the credit of it, which they may easily do if any stock be left: for thereby they will preserve the remainder of the £40,000, and also receive many fines [premiums] for other houses not before insured. And, in all prob. the credit of paying so great a loss, will bring so great a sum of money as may repair the greatest proportion of the loss.

Besides, should it be supposed that the office should be at a stand for less than the loss of £40,000, viz. at the loss of £20,000 or £30,000; yet the persons that have insured their houses cannot lose by it: For the prem. of 10,000 houses do not, by the computation of those houses already subscribed, amount to above £35,000 for 31 years. Now considering that some are for shorter terms, the prem. cannot be reckoned above £25,000. Now if the office should continue 5 or 6 years before such a supposed loss should happen (and some time must be allowed for such a number), this fund were able to pay such a loss of £20,000 or £30,000; and to pay all persons whose houses were not burnt their ins. money back again: only, with such deductions as were reasonable for that proportion of time they were insured; which deductions cannot be prob. less than one-third part of the £25,000 prem. So that, it is plain, that little less than the loss of the whole £40,000 by one fire, cannot any wayes make the insurers, or at least the insured, losers.

To destroy the whole sum of £40,000 the office must lose 200 houses, which at £200 per house is £40,000; being a computation large enough: for on all great fires there will be small houses, which will not cost above £50 or £60 in rebuilding. And so great a loss as 200 houses to the office, cannot probably be unless there be 2000 houses in the whole burnt: (because 10,000 houses are but the tenth part of 100,000 which are computed to be the number of the whole): Now 2000 burnt houses are so vast a fire, that was never known in the memory of man, or read of in hist., except that of the City of Lond. in the year 1666. And there cannot be a stronger argument than this; for what never was never may be, and is not reasonable to expect (the Fire of Lond. excepted). For all men agree, it was Begun and Increased by Designe; and now not to be Effected in any Place, were the same Evil Designes at Work, because there are not so many timber houses together: nor many more in the whole left. The greatest fire that ever was in the memory of man (except Lond.) was that of Southwark [A.D. 1212]: Now in that fire, there were not above 500 houses burnt. And if the office had been then in being, it could not prob. have lost about 50 ins. houses (being the tenth part), which at £200 per house is but £10,000.

That the office cannot prob. lose above a tenth part, when a tenth part of the whole are only ins.; it will be evident to any that will inspect the book of subs., for the £9,000 or £10,000 p.a. already subs. to the insured, is so dispersed throughout the whole, from Westminster to Lime House, and in Southwark on the other side of the water, that its difficult to find out a place, if a great fire should happen, that the office would lose more than its proportion.

So that it is clear that the bank of £40,000 for 10,000 houses is sufficient. It then remains to inquire, whether if the whole were ins. by add. of £20,000 for every 10,000 houses ins., the fund were sufficient to discharge those many losses, which the casualty from so great a number of houses must necessarily produce. The best way to prove this will be to examine from the time past, and begin since the Great Fire of Lond. For though the houses were then less in number, yet the casualties were the same: they proceeding from the number of inhabitants and not houses.

Now if it be computed what the losses from fire since the year 1666, it will be found that within these 14 years there has not been less than 35 fires in and about Lond. . . .

Then follows the detailed list of fires, with a note: "The calculation of the houses burnt by these several fires are 750 houses or thereabouts; which (at least £200 a house, one with another) amount to £150,000." The document proceeds:

Whereas the very *Rent* of the fund would have been £154,000, supposing the whole number of houses to be 100,000 and the add. of £20,000 to every 10,000 houses, which would make £11,000 rent p.a.; so that 14 years rent makes £154,000: besides that great sums of money, which in that time must have been received by fines [prems.] from those houses whose terms would have been expired. And this must be granted, if the office could have supported itself under those many losses, *when they gave no assistance to the extinguishing and preventing of the fires, it may be reasonably supposed to subsist under future casualties, when it is assisted by the contrivance and industry of a company of men, versed and experienced in extinguishing and preventing of the fire.* What advantage that may be is best guest by considering what old and experienced soldiers are able to perform in respect of a tumult, and raw and unexperienced men.

Thus it is plain that the £40,000 for 10,000 houses, with the add. of £20,000 for every 10,000 houses, must infallibly be a security to make good all losses from fire to the insured.

There is a further advantage in the propositions, that £40,000 is laid out in *Ground Rents*, and so the add. of £20,000 from time to time: which makes the bank or fund certain. Whereas all other public banks being in mony or goods, are subject to variety of uncertainty; the first is unfixt, easily imbezled, or concealed; and when disposed of subject to great losses. The latter subject to decay, alteration of fashion, and a glut of the market: both which alters the value of the bank.

Upon this account most public banks have had great misfortune: some not only to the loss of the principal, but also of considerable sums lent on the credit of the bank. Nay vast sums of money given to be employed by way of stock for the benefit of the poor. Upon these considerations, it was found absolutely necessary in the settling of this design to place the fund or security in land: for nothing uncertain could be a security for a term of years that is certain: besides houses being themselves realities, their security ought to be real. By other banks the security is personal; but by this proposal it is real; for every man hath a mortgage for his mony.

Thus the *certainty* of the propositions appear.

As to the easiness of the *Terms*, being 5*s*. p. a. for £10 rent of brick houses and 10*s*. for timber, being generally granted moderate, will need little to be said to prove it. Only this may be observed, That the improvement and good husbandry of 5*s*. a year, for the age of man can no other way (but by insuring) repair the loss of £100.

It is the interest of landlord and tenant to ins., because the hazard is certain and the terms easy.

For by the constant course of accidents (amongst such a number of houses) there will be one year with another above the loss of 50 houses burnt, as appears by the computation of the last 14 years, and every house is liable to be one of that number. Therefore why should any person run that hazard since he may so easily insure his estate?

And though the landlord may expect to be insured by the tenants covenants, yet it is his interest (if his tenants do not) to insure; notwithstanding his tenant be obliged by his covenant to rebuild: The landlord by insuring doth not release his tenant; but if he be able he must rebuild; and then the landlord receives the money of the office to his own use. [Here is the speculative element so common to schemes of this period!]

A man would part with 5*s.* or 10*s.* in an £100 only to sleep quietly for a year, and not to be disturb'd with that dismal cry of *Fire, Fire,* when himself is not in danger to be burnt. Neither would a man for such a small sum if a loss should happen, be disquieted with the too late advice of friends, every one blaming, and asking *why did he not insure?* Or be tormented by his own thoughts with the *wish I had insured.*

Besides the landlord hath a double advantage, for he improves his estate as well as secures it: For by insuring a house for 31 years, the advance being but a quarter of a year's purchase, the estate becomes two or three years purchase more in value: for that which before was worth but 14 or 15 years purchase, will then be worth 17 or 18. Besides it will be a better estate both for settlements or raising money. Now the improving of an estate is the business and design of most men. It will be to no purpose to use more arguments, if the fear of loss, nor the expectation of profit (those two governing principles of human action, *reward and punishment*) will not invite.

They that shall subscribe before the writings are sealed, are to have the same benefit with those that have already subscribed.

These Papers, and the Propositions are delivered gratis at the office on the Backside of the Royal Exchange.

After searching in vain for a copy of this document in the libraries of Lond., we found, in the autumn of 1874, the print from which we have taken the above, carefully preserved in the State Library, in the City of Albany, N. Y.

Returning to the records of the Corp. of Lond., we find, without precise date, but subsequent events enable us to read as on the 12 Nov. 1680, the following:

This Court doth nominate and appoint Sir Thos. Beckford and Sir John Kinghts, Aldermen; Mr. Ashhurst, Mr. Midgeley, Mr. Hammond, and Mr. Deputy Clarke, Commoners; or either of the said Aldermen and two of the said Commoners, to be a Committee to peruse and consider of sertaine proposalls humbly offered to this Court by Mr. Deputy Newbold, a member thereof, intituled, *London's Improvement: the Builder's Security asserted,* and to make a Report of their opinion thereon to this Court.

We believe the deliberations of this Committee were prompt; but that the occasion for considering its Report by the Gen. Court did not arise until some 8 months later; and this therefore leads us into another year.

1681.—On the 17 June this year there is the following:

This day the Committee to whom Mr. Deputy Newbold's proposals for insuring the new buildings of this citty in case of fire were referred brought in a report in writing under their hands, of their opinions thereon, the tenor whereof followeth in these words, viz.:

To the Right Hon. the Lord Mayor, Aldermen, and Commons of the City of London in Comon Councell assembled. Whereas this honorable Court by their order of 12 November were pleased to refer unto us whose names, etc., are subscribed, the consideration of certain proposals tendered to this Court by Mr. Deputy Newbold for securing the new buildings of this Citty in case of fire, Now wee doo humbly certify that wee have mett several times for that purpose, and upon serious consideration had of the said proposals, and wee are of opinion that ye design in general will be of verry great advantage to the owners and inhabitants of all such new buildings, and is very well worthy of an effectuall proposition. But forasmuch as there may be great difficultyes attending ye strict prosecution of ye method propounded in fixing a corporation whereby some security may be invested and in settling ye assu. soo as itt may be satissfactory to ye severall proprietors, Wee doo therefore humbly offeer it as our opinion:

1. *That instead of such Corporation, the Chamberlain of London might undertake ye said design, for which wee are well satisfyed ye Chamberlain will have verry good encouragement; and also that ye Chamber may give security to ye full satisfaccon of the owners and inhabitants of such new buildings.*

2. Whereas Deputy Newbold proposeth 5% for raising a joint stock, wee are of opinion that ye brick buildings are soo considerable in number and value that if 2½ per sent according to ye full value each house paid by ye respective proprietors, a sufficient summ may be raised to incourage this Citty in the said undertaking.

3. That ye overplus of ye money soo raised after a sufficient security thereby made may be to ye Chamberlain of London, and not be devided as ye Deputy proposes, for that ye houses who thus secured will bee soo much advanced in their value; and that ye adventurors will be thereby sufficiently recompensed.

4. Whereas Mr. Deputy Newbold hath taken a great deal of pains and bin att some charge in frameing and presenting to this Court the said proposalls, in case this Court shall imbrace and prosecute the same for ye Chamberlain, *Wee are of opinion that he will deserve a good compensation and is a fitting person to bee one amongst others and that may be imployed in ye managing of this affair.* All which we submit to this Honorable Court this 16 day of November, 1680. Signed by E. Claver and 5 others.

The report being read and debated, this Court doth refer ye further consideration of ye said proposalls to ye said Committee. And it is ordered that any member of this Court may be present and give his judgment and vote at ye said Committee. And Thursday next in ye afternoone shall be ye tyme for ye first meeting of ye said Committee in ye Mayor's Court in Guildhall, and they to continue meeting on every Thursday following in ye same place till ye said insurance be by them fully agreed and concluded on. And then to make report of their proceedings and resolutions thereon to this Court.

On the 16th Sept. this year, there appeared, in the shape of a broadside, the following *Advertisement from the Ins. Office for Houses, etc.*:

> These are to give notice that the office and security formerly proposed for insuring houses from fire, after the rate of *sixpence* per £1 for brick houses, and 1s. for timber, is now perfected and settled; and the persons concerned in the security will attend every day at their office on the back-side of the Royal Exchange, from the hours of 9 till 12 in the forenoon, and from 3 till 6 in the afternoon, to subscribe policies for all persons desirous to insure their houses, as far as the number of 3000 houses.
>
> Much labour, much time, hath been spent in settling this affair: it being above a year since the propositions for insuring houses from fire were first made publick. This hath occasioned several discourses, as if it were a project in its own nature, not to be practised; and would prove like the abortive conceits of several others in this last 20 years, on this subject. But whosoever considers the wayes and means that were at first proposed to be followed in settling this design, such as were thought absolutely necessary to give that satisfaction which the greatness of the concern did require, will believe this affair could not have been otherwise or sooner effected.
>
> The way and means to settle this designe, as it was first proposed, was thus: That there should be a general meeting of all persons that had any thoughts of insuring their houses, and were well-wishers to such a designe, before any security was settled: at which publick meetings the value and nature of the security, manner and method of settling it, and all things else that could be offered either to the advantage or disadvantage of this designe, should be debated and regulated.
>
> This scrutiny this office was to pass: For though some public designes, whose fund have been *reputation and personal credit*, have thriven best without examination and (of a suddain) raised themselves into great reputation: yet sometimes (mushroom-like) they have had their duration and rise equal; their creditors have lost their money, before they had the leisure to consider why they trusted them. So on the contrary those designes, whose fund are in land, being real and certain, can have no greater advantage than to have their foundation examined by those that trust them. And though such deliberation may make their beginnings and growth slow: yet they will be like the oak, durable.
>
> Many general meetings upon publick notice were held at the office, where several gentlemen and eminent citizens were present. The first debate was about the value of the security, whether £40,000 was sufficient to secure 10,000 houses, as it was first proposed, with the addition of £10,000 for every 10,000 houses? This after much debate, appeared to be sufficient to the majority; because though 10,000 houses are of greater value than the fund: yet being supposed that they will stand at great distances, they could not be destroyed by any one fire. Yet because some gentlemen questioned it, and it being the designe of those persons concerned in the office to give full satisfaction to all, it was at last agreed, that the security of £40,000 then proposed should be only for the insuring of 5000 houses, with the addition of £10,000 for every 5000 houses.
>
> The next debate was the *nature of the security*, which was proposed to be in ground rents. This was agreed by all to be the best sort of security, and least subject to alteration in value, etc., etc. The *manner* of settling this fund was debated, etc., etc.
>
> Last of all, the *method of settling* this design was debated, which was agreed to be referred to such counsel as should be then chosen; there was also a committee chosen of several gentlemen then present, which were desired to attend the councel, and see the execution of all things debated and agreed to. . . . The councel did all agree to the conveyance, but altered the proposition for *rebuilding*: so that if a house insured be burnt, the loss must be satisfied in money; for the office is not to rebuild, though both were at first proposed, (to be at the option of the insured). This was thought necessary to avoid those disputes which might arise about the dimensions, form, and substantialness of building.
>
> The form of the *Policy* was also settled by the councel; and the names of those persons that are to subscribe them are Mr. Samuel Vincent, Dr. Nicholas Barbon, Mr. Benjamin Bartlett, Mr. Samuel Tookey, etc., and any two of them signing make good the policy.
>
> This was the *method* that was followed in forming this design, and altho' all endeavours were used for dispatch, yet thro' the weightyness of the affair, number, and greatness of the councel, it was last Trinity-term before the last perusal of this settlement had passed all the councel. . . . And altho' some persons who have had the misfortune in the interim to lose their houses for want of the office being settled (they being since burnt) have cause to think it tedious: yet the generality of men will agree, this design could not have been sooner perfected.

There is a freshness about these details which more than compensates for the labour involved in reproducing them; and withal we learn the care that was taken at every stage for the perfection of the project. The "advertisement" concludes as follows:

> These are to give notice, that whereas several gentlemen, to show their willingness to encourage this design, have subscribed to insure their houses, as soon as the conveyances were settled: upon which account it was proposed, as an acknowledgment for their encouraging the office, that they should have *a year's purchase gratis*: that is that they should insure 8 years for 5 paid, 12 for 7, 21 for 9, and 31 for 10. And whereas many more would have subscribed had there been due attendance given at the office: and because it is now vacation, it is therefore thought fit to propose, that those gentlemen who shall insure their houses and take their policies before the 1st Nov. next, shall have the same advantage with those that did subscribe.

A copy of the original is preserved at the British Museum.

The following is the T. of premiums charged by this the first Joint-Stock Fire Ins. Asso. founded in Gt. Britain or elsewhere. We give it here, instead of under the title Fire Ins. Prems., because it tends to elucidate the scheme of the Company.

The Prem. or Rate of Ins. for Brick-Houses (the same to be reckoned Double for Timber) from One Pound p. Ann. Rent to an Hundred, for the Term of Thirty-one Years or Under, which is Sixpence in the Pound-Rent for One Year, and to Discount by way of Purchase, that is Five Years Paid down for Seven Years Ins.; Seven for Eleven; Ten for Twenty-One; Eleven for Thirty-One. For every Pound-Rent Insured, Ten

Pounds in Money (which is One Hundred Pounds for Ten Pounds per Ann.) is to be paid as often as the House is burnt down or Demolished, within the Term Insured. If Damaged then to be Repaired.

Pound Rent.	Insured for 7 Years.			Insured for 11 Years.			Insured for 21 Years.			Insured for 31 Years.			Houses Burnt. Money Paid.		
Lib.	*l.*	*sh.*	*d.*	*l.*	*sh.*	*d.*	*l.*	*sh.*	*d.*	*l.*	*sh.*	*d.*	*l.*	*sh.*	*d.*
1	0	2	6	0	3	6	0	5	0	0	5	6	10	0	0
2	0	5	0	0	7	0	0	10	0	0	11	0	20	0	0
3	0	7	6	0	10	6	0	15	0	0	16	6	30	0	0
4	0	10	0	0	14	0	1	0	0	1	2	0	40	0	0
5	0	12	6	0	17	6	1	5	0	1	7	6	50	0	0
6	0	15	0	1	1	0	1	10	0	1	13	0	60	0	0
7	0	17	6	1	4	6	1	15	0	1	18	6	70	0	0
8	1	0	0	1	8	0	2	0	0	2	4	0	80	0	0
9	1	2	6	1	11	6	2	5	0	2	9	6	90	0	0
10	1	5	0	1	15	0	2	10	0	2	15	0	100	0	0
20	2	10	0	3	10	0	5	0	0	5	10	0	200	0	0
30	3	15	0	5	5	0	7	10	0	8	5	0	300	0	0
40	5	0	0	7	0	0	10	0	0	11	0	0	400	0	0
50	6	5	0	8	15	0	12	10	0	13	15	0	500	0	0
60	7	10	0	10	10	0	15	0	0	16	10	0	600	0	0
70	8	15	0	12	5	0	17	10	0	19	5	0	700	0	0
80	10	0	0	14	0	0	20	0	0	22	0	0	800	0	0
90	11	5	0	15	15	0	22	10	0	24	15	0	900	0	0
100	12	10	0	17	10	0	25	0	0	27	10	0	1000	0	0

These outsiders—outside the City authorities—therefore got first in the race, which led to a fierce and determined warfare, concerning which we shall have to enlighten the reader as we proceed. That the gentlemen at "the back-side of the Royal Exchange" were the real aggressors in this warfare seems clear; for they not only got the start in the design, but they immediately issued another broadside, of which the following is an abstract, the intention of which is clear.

An Enquiry whether it be the interest of the City to insure houses from Fire; and what advantage the insured may expect more than from the Ins. Office already setled. It consisted of four pages, but the following are its principal paragraphs:

The persons concerned in the Ins. Office for Houses, are well satisfied in the wisdom and justice of the City of Lond.: therefore do not believe any act of theirs will prejudice a design so much for the public benefit of the City; and are persuaded (however their councils seem now to be influenced) that their maturer deliberations will not for the present, interrupt the prosperity of their settlement; but that they may enjoy, if not 14 years sole possession, allowed by the wisdom of Parl. for an encouragement to the first inventors: yet such time, till the profit of the undertaking make it appear worth their imitating. But because private interests do sometimes govern public councils, contrary to their wise and natural results, for want of a true information of the subject they debate: and lest that the pub. of the Cities intention to insure houses should be prejudicial to some, who either out of respect to them, or hopes of easier terms, so long delay their ins. till their houses are unfortunately burnt. It was therefore thought necessary for the satisfaction of the City and all that have concern in houses, to have this matter fairly debated, and examined how far it may be the interest of the City, to engage in this affair: and whether there are not probable reasons to believe that the City may (as parliaments and wise assemblies often do) upon a second debate alter their intention to insure houses.

There are but two reasons (since an ins. office is already setled) that can ingage the City to undertake the same design. 1. Out of respect and care of those that are under their government: and upon a supposition they can give them better security. 2. From an expectation of great profit such an undertaking will produce, too great for private persons; and arising chiefly from their citizens, it ought to belong to them. Now, if upon debate it appears that they are misinformed in both: Then it must be concluded that a wise assembly, such as the Great Council in the City, will let fall their formerintentions. . . . .

Therefore taking it for granted that the security is in all respects equal, yet there are differences that make the same security better, as it is now setled by private persons than if setled by the City; and every difference is an argument when things before were equal. *First*—It will be better managed for the advantage of the insured and insurers. Men's credit, care, and industry are more concerned to preserve private interest than public: By this means fires will be better prevented and extinguished. The ill management and loss of the Corp. affects no man's credit or estate. *Secondly*, The payment of losses and satisfaction of damages must be easier and quicklier dispatched by the office than by the City. The attendance upon the Court of aldermen or Committees; the respect that is given them, and the waiting without doors for orders, when no favors are desir'd, are uneasy delayes to business such as men would avoid; and when terms are equal, rather to deal with their equals. *Thirdly*, the rule of justice is not always the same betwixt private and publick, as between one private man and another: a man must part with all to satisfy his debts. But if a very great loss should happen to the City, the rule in paying may not be the same: for the maxime of Government is that the private concerns should suffer, rather than the public be undone: because in the welfare of the publick all are concerned. *Lastly*, If the City refuse to pay a loss, the remedy is not so easy and certain (by any provision they can make) as it is against private persons, etc., etc.

The writer reasons this out, and then proceeds: "The profit is much less than was represented: for if Mr. Newbold's calculation of the profit and loss had any influence on the vote of the City, it will appear they are much mistaken." He goes on to show that since the Fire of London there had been 97 houses [instead of 750 as formerly stated] burnt in the City and Liberties, which at £400 a house amounted to £38,800, bringing out the loss on Mr. Newbold's basis at £1300 p. a. The document concludes with the announcement, that all persons that should insure their houses, should have liberty until 1st Jan. 1682, to bring back their pol., and receive a return of their prems., less only a proportionate deduction for the time the pol. had run.

A copy of the original of this document is preserved in the British Museum.

Returning now to the Corp., whose Committee had in the mean time been proceeding with the development of Mr. Deputy Newbold's—or rather now its own—scheme, we find, under date 13th Oct. 1681, the following:

This day ye Committee appointed to consider of proposalls for insuring houses from fire presented ye draught of a writing by them agreed on and thought fitt to be printed, to give ye general nature of ye said undertaking, which being read this Court did well like, and ordered that ye same be forthwith printed and pub.

It is also ordered that ye said Committee be empowered to use all Lawfull ways and meanes by Counsell and otherwise for ye better enabling them to proceed to ye preserving this design, and answering all objections that may arise and removing all hindrances that may retard the effectuall carrying on of ye same.

On the 16th Nov. 1681, there is the following:

This day the Committee for insuring houses in cases of fire brought in a Report in writing under their hands of their proceedings thereon, together with a paper of Generall proposalls by them agreed on and annext to the said Report the tenor of which Report, and Proposalls following in these words, viz.:

To the Right Honorable the Lord Mayor, Aldermen and Commons of the Citty of London in Comon Counsell assembled:

We whose names are subscribed, Committee amongst others appointed to consider proposals for Ins. of houses within this Citty and Liberties in cases from fire, do hereby certifye that we have had daily meetings and serious consultations about that same, and after many repeated debates have at length agreed to ye Generall propossalls hereunto annexed, which we conceive wil not only Invite Cittyzens and others into this Ins., but will alsoe be certaine to raise a good Revenue to the Chamber. All which notwithstanding wee humbly submit to ye grave Wisdome of this Honorable Court—Dated the 15th day of Nov. 1681. Signed by W. Ashhurst and 16 others, including Mr. Newbold.

Upon reading of within Report as also of the said Propossalls paragraph by paragraph, and upon consideration thereof, This Court did very well like and approve of ye said propossalls, and it is referred back to the said Comittee speedily and effectually to put the same in execution, And this Court doth order that ye said propossalls be forthwith printed and pub. in ye Gazette or otherwise as the said Comittee shall think fitt.

And it is likewise by this Court referred to the said Comittee whether it may be the Interest of ye Citty to insure Houses in ye Borrough of Southwark from fire so far as the Liberties and privileges of this Citty do extend, and to report their opinions in that particular to this Court.

Then there appears the following more general resolutions of the entire Court of Common Council, but there is some confusion as to the date.

Report having now bin made unto this court of Propossalls for insuring houses from fire by a Committee formerly appointed for that purpose, this Court doth agree and resolve to undertake ye Insuring all houses within this Citty and Liberty from fire and to present ye same with all expedition. And it is referred to ye Rt. Hon. ye Lord Mayor, Sir John Lawrence, Sr. James Edwards, Sr. Robert Clayton, Sr. John Shorter, Knight, and Henry Cornish, Esq., Aldermen, Mr. Richard Hawkins, Sir Thomas Player, Knight, Captaine Clark, Deputy Turgis, Wm. Swynoch, Capt. Hutoy, Mr. Jobell, Mr. Walker, Deputy Fflavell, John Niccolls, Esq., Nicholas Charleton, Esq., and Deputy Newbold, Comoners, together with ye said former Comittee, or any two of ye said Aldermen, and four of ye said Comittee, to consider how ye said undertaking may be accomplished, and a fund provided for that purpose, and they are desired forthwith to cause public notice to be Given of the Intenson and resolution of this Court in this matter. And it is ordered that their first meeting be on Saturday morning next att oyne of ye Clocke in ye Guildhall, and of their opinions and proceedings, and thereon to make Rep. to this Court, and Daniel Man to warm and attend them.

That this was in the winter time, or on the approach of winter, appears clear from the concluding words.

An addition to the standing committee is made: It is now agreed and ordered by this Court that Samuel White, Citizen and Ironmonger of London, servant to Mr. Town Clerk, shall be Clerk to the present Comittee for insuring houses in cases of Fire and to every other Comittee to be hereafter appointed for this affaire, to continue therein during ye pleasure of this Court.

The following are the proposals which were read at this meeting:

I. That all such Persons and Corporations as shall think fit to Insure their Houses and Buildings scituate within the City of Lond. and Liberties thereof in Cases of Fire shall be received and provided for by this City according to the Terms and Conditions hereunder mentioned.

II. That Books shall be prepared by the 1st day of December, 1681, and lodged in the Chamber of Lond. for receiving and entring the Subs. of all such Persons as shall come into this Ins.

III. That Lands and Ground Rents, belonging to the City of Lond. to the Value of One hundred thousand Pounds at least, shall be forthwith setled as a Fund to Insure such Houses as shall be Subs. for and brought into the said Ins.

IV. That hereafter, as Subs. shall be made, a further additional Fund by the *Præmuim* which shall be received, shall be made and setled by the said City for security of all such Houses as shall be so Subscribed for.

V. That these Funds shall be setled upon Trustees in such manner as the Insured in Cases of Damage may receive the Value of their Ins. with the most speed and least trouble unto them.

VI. That the *Præmuim* for ins. of Brick-houses and Buildings for the term of One-and-thirty Years shall not exceed 48*s.* p.c. according to the Value that shall be Insured on such Houses; that is to say, For the Ins. of a House valued at £300, seven pounds and four shillings for the said Term of 31 Years, and that all Terms of years shall be Insured proportionable to that Rate, for which purpose a Table shall be calculated.

VII. That the *Præmium* for Insuring of Brick-houses and Buildings *for ever* shall be £4 p.c. according to the Value that shall be Insured on such Houses and Buildings, *viz.* for Insuring a House of £300 Value Twelve Pounds.

VIII. That the *Præmuim* for Insuring of Timber-houses and Buildings *for ever* shall be £8 p.c. according to the value that shall be insured upon such Houses and Buildings, *viz.* £16 for Insuring a Timber-house to the Value of £200.

IX. That all Terms of Years in Timber-houses and Buildings shall be Insured proportionably to the said Ins. of £8 p.c. for ever.

X. That the said Committee in order to the said Security do forthwith by the advice of Council proceed to prepare Settlements of the said Lands and Ground Rents and to draw up Articles and Agreements at large in pursuance of these Heads to be proposed to such as shall Insure upon the same.

To the printed copy there was added this note: "*All which Proposals being unanimously agreed to and approved of by this Court are Ordered forthwith to be Printed and Published and speedily and effectually put in Execution.*" And the document bore the official signature of Wagstaffe, the Town Clerk.

Finally, there was issued by the Corp. the following official notice:—The book of Subscriptions for Insuring of Houses (by the City of Lond.) in case of Fire, is now open, wherein several Aldermen and others have subscribed for a considerable number of houses, and the same will so continue in the Chamber at the Guildhall, where constant attendance will be daily given from 9 of the clock to 12 in the forenoon, and from 3 of the clock until 6 in the afternoon, for entering the subscriptions of all such persons as shall be willing to insure.

This was accompanied by the T. which, for typographical reasons, is printed at the top of page 451.

With this further note appended:

The Committee for Ins. of Houses in case of Fire do desire that such Persons who intend to Insure with the City, will for their better Expedition bring to the Chamber Notes in writing in what Parishes and Wards their Houses are scituate, by what Signs they are call'd, the names of their Tenants or Occupiers, and the Value and Time they intend to Insure upon them. And this with what convenient speed they can, that they may the sooner proceed to the Nomination of Trustees, and perfect their Assurances.

The finishing touch to the scheme of the Corp. of Lond. had no sooner been given, as herein described, than "the Gentlemen of the Ins. Office" rushed once more into print, and produced the following broadside:

Observations on the Proposals of the City to Insure Houses in Case of Fire, which commences:

> **When right is invaded, all manner of defence is lawful; therefore since the City of Lond. endeavour to set up the Insuring of Houses from Fire, by the invention of other persons, it is reasonable to expect that they who were authors of the designe, and are thereby injured, will not forbear to pub. those truths which may lessen their adversary and be useful to preserve their right, though by so doing they should seem to reflect on the justice, wisdom, or credit of the City of Lond. For that the Gentlemen of the Ins. Office on the backside of the Royal Exchange were the first inventors of this design must be granted by all: because the City would have otherwise accepted that fair proposal**

A Table of all Terms of Years from One to Thirty-one Inclusive; and from thence by every Ten Years to One Hundred Inclusive; and from thence for Ever; where is set down the Sums of Money to be paid for Insuring a Brick House for any of these Terms of Years proportionably to Four Pounds for Ever, for every Hundred Pounds value Insured on such Buildings: Calculated by Order of Common Council.

Four Pounds per Cent. for Ever.

Years.	£	s.	d.	Years.	£	s.	d.
100	3	6	8	19	1	18	11
91	3	5	7	18	1	17	11
81	3	4	2	17	1	16	9
71	3	2	5	16	1	15	6
61	3	0	3	15	1	14	3
51	2	17	6	14	1	12	11
41	2	13	9	13	1	11	6
31	2	8	7	12	1	10	0
30	2	8	0	11	1	8	4
29	2	7	4	10	1	6	8
28	2	6	8	9	1	4	10
27	2	5	11	8	1	2	10
26	2	5	2	7	1	0	9
25	2	4	5	6	0	18	5
24	2	3	7	5	0	16	0
23	2	2	10	4	0	13	4
22	2	1	11	3	0	10	5
21	2	0	11	2	0	7	3
20	2	0	0	1	0	3	9

Note, That there is to be paid double so much for Timber Houses of like value.
[The above T. is referred to on page 450.]

that was at first made to the Rt. Honble. the Lord Mayor, etc., viz. To refer it to council to determine this original right: And if it did appear [by any of the City Journals] that they had formerly resolved the same way of effecting the design, or could adde any new thoughts that improved it, other than lessening the rates or prolonging the terms of ins., which are no effectual differences, nor may perhaps be any advantage to the insured. The gentlemen of the Ins. Office did promise to desist from insuring in the City and Liberties, and though it may be true that about the year 1670 proposals were made to the City about ins. houses from fire, upon which a Committee was chosen to examine them: yet they were extremely different from this design, and so impracticable in themselves that they were forced to lay them aside. And it is more than probable that the City could never have settled this affair had they not taken the pattern from the Ins. Office, since ten years have been spent without making the least progress in it.

The document then proceeds: "Now since the undertaking of the City to insure houses is but a copy of another's invention, the best way to discredit it, and show its imperfections, will be to compare it with the original." This comparison is then carried out with a good deal of astuteness. We purpose to make a few illustrative extracts:

The *second* observation is on the rates or prem. of ins., which is 48 shillings p.c. for 31 years for *brick houses*, and double the price for *timber;* and so in proportion for longer and shorter termes. This rate is 2 shillings in 50 cheaper than that of the Ins. Office, which was probably valued as a great contrivance to draw customers. The effect of such practices hath been already observed in the paper of enquiry: which is that it must bring loss to the undertakers, and at last ruine the designe. So that the managers of this affair seem not so much to regard the future consequences as the most probable means to bring present money to the Chamber, and places to themselves. *But since the gentlemen of the Ins. Office are under this force, they are resolved rather to run the hazard of losing than that the City should make advantage by their invention.* Therefore, that the easiness of the terms may be no encouragement to insure with the City, they do resolve for the future, to set their rates at 45 shillings and ten pence p.c. for brick houses for 31 years: which is *five pence* per £1 rent for *brick houses* for a year; and double the rates for *timber.* And to discount by way of purchase, viz. 5 years paid down for 8 years ins., 7 for 12, 9½ for 21, and 11 for 31 years. These rates are lower than the cities, and more agreeable to practice than their table, which is after the rate of 13 years purchase for 31 years, and near 16 years purchase for 51 years; prices never heard of among purchasers. *And do further declare, that they will always set their price under the City*, though they do not intend to alter any more until they are certain the City can proceed and have settled the fund.

This qualification of their threat was prudent. They then shadow forth legal considerations, which we shall find they afterwards brought into play with overwhelming success :

> Those citizens that manage the revenue of the City are but stewards for the rest, and if they (thro' rashness and want of knowledge) venture the public revenue of the City on a project that brings loss, they prejudice the whole body of citizens : for if the revenue of the City be wasted, then the charge of the government must be supported by taxes. And it is very probable that there is no great overplus of revenue belonging to the City, more than is necessary to defray the charge of the government, the Trust of the Orphants, and the repairs of the publick places : for if there were, why is money borrowed at interest ? etc.

Then the attack assumes another shape :

> The *third* observation is, on the terms and length of ins. The office on the backside of the Royal Exchange insures no longer than for 31 years. The City propose to insure for *what term desired, and for ever*. This perhaps was thought of as another stratagem to bring in customers, as if it might ingage all those that had the inheritance of houses and long terms ; and besides might raise the value of the premiums, and bring a greater sum to the Chamber. They never consider that those that *first formed the design* had probably thought of this, and had it been convenient and advantageous might practice the same ; and therefore since they have taken this design on the second hand and upon trust, were very adventurous so much to alter from their pattern, unless they were provided to give better reasons for their so doing than are to be expected from them. For to insure for ever is to spoil the whole design : because no security can be good where all the profit is at first received, and the loss is uncertain, and continues for ever. . . . Therefore should men be so imprudent to insure their houses for ever, this Corp. would have greater occasion for an act of restraint, than the spiritual corporations heretofore have had : for though the Church and Colledges, by granting long leases, prejudiced their successors, they left them the old rent : But those gentlemen of the Committee will not be so kind to their successors ; for they would not only leave them without reversions, but entail a perpetual loss and charge upon the Corporation. . . .
>
> *Lastly*, what will become of their settlement [of ground rents] if the City forfeit their [its] charter ? Whether the lands of the Corporation do not devolve upon the Crown ? Who then shall satisfie losses and extinguish fires ? By these observations it may appear that the gentlemen of the Committee did not well understand the design they were about ; for which they are not to be blamed : for it is not reasonable to expect that they should so well (on a suddain) understand a design as the inventor of it, who had spent much time and study in the contrivance. . . . But however, those gentlemen that intend to insure their houses, may perhaps consider that by insuring with the City, they support the contest : which though it bring down the prices of the ins., yet in the end must ruine the design, and so will lose that advantage (which by encouraging the first inventors) they might probably expect from it.

Then there follows a notice that those gentlemen who had paid the higher scale of rates might come to the office and claim a return of the difference in conformity with the new scale, which was as follows :

A Table for Ins. of Houses from Fire from One Pound p.a. to a Hundred for Thirty-one Years, or Under, after these Rates, viz. Five Pence in the Pound for Brick Houses and Ten Pence for Timber, and to Discount by way of Purchase. That is, Five Years paid for Eight Years Ins.; Seven for Twelve; Nine and a Half for Twenty-one; and Eleven for Thirty-one; which is Forty-Five Shillings and Ten Pence for Brick Houses at Ten Pounds p.a.: and Double for Timber. This is under the Cities Proposals Two Shillings and Nine Pence p.c.:

Pound Rent.	Insured for 8 Years.			Insured for 12 Years.			Insured for 21 Years.				Insured for 31 Years.			Houses Burnt. Money Paid.		
Lib.	*l.*	*sh.*	*d.*	*l.*	*sh.*	*d.*	*l.*	*sh.*	*d.*	*ob.*	*l.*	*sh.*	*d.*	*l.*	*sh.*	*d.*
1	00	02	01	00	02	11	00	03	11	0½	00	04	07	10	00	00
2	00	04	02	00	05	10	00	07	11	00	00	09	02	20	00	00
3	00	06	03	00	08	09	00	11	10	0½	00	13	09	30	00	00
4	00	08	04	00	11	08	00	15	10	00	00	18	04	40	00	00
5	00	10	05	00	14	07	00	19	09	0½	01	02	11	50	00	00
6	00	12	06	00	17	06	01	03	09	00	01	07	06	60	00	00
7	00	14	07	01	00	05	01	07	08	0½	01	12	01	70	00	00
8	00	16	08	01	03	04	01	11	08	00	01	16	08	80	00	00
9	00	18	09	01	06	03	01	15	07	0½	02	01	03	90	00	00
10	01	00	10	01	09	02	01	19	07	00	02	05	10	100	00	00
20	02	01	08	02	18	04	03	19	02	00	04	11	08	200	00	00
30	03	02	06	04	07	06	05	18	09	90	06	17	06	300	00	00
40	04	03	04	05	16	08	07	18	04	00	09	03	04	400	00	00
50	05	04	02	07	05	10	09	17	11	00	11	09	02	500	00	00
60	06	05	00	08	15	00	11	17	06	00	13	15	00	600	00	00
70	07	05	10	10	04	02	13	17	01	00	16	00	10	700	00	00
80	08	06	08	11	13	04	15	16	08	00	18	06	08	800	00	00
90	09	07	06	13	02	06	17	16	03	90	20	12	06	900	00	00
100	10	08	04	14	11	08	19	15	10	00	22	18	04	1000	00	00

London. Printed for the Gentlemen of the Ins. Office on the Back-side of the Royal Exchange, where these papers are to be had gratis. 1681.

A copy of this is preserved in the British Museum.

The Corp., however, still continued its course, and on the 15th Dec. 1681, we find the following:

This day the Comittee appointed to insure houses within this Citty and Liberties in case of Fire did deliver into this Court a Report in writing under their hands touching the same, the tenor whereof follows, viz.:

To the Right Hon. the Lord Mayor, Aldermen and Comons of the City of London in Comon Counsell assembled: We whose names are subscribed Comittees amongst others appointed to Insure houses within this Citty and Liberties in Case of Fire are of opinion that the same is of absolute necessity to be managed by persons authorized by authority of this Court, until a new Comittee can be chosen; also that the Comittee for the time being should be fully empowered by an Act of this Court to settle ye Fund (consisting of Lands and Ground rents of the Citty to the value of £100,000 formerly ordered by this Court by Advice of Counsell) upon Trustees to be chosen by the subscribers from among themselves or others as they shall think fitt. And whereas some propositions have bin and more may be Offered to ye Advantage of ye Chamberlain pursuant to the late Order of this Court in that behalf, but finding no Authority to make any Allowance or Reward for the same, people have been discouraged from proceeding therein.

Wee therefore humbly offer it to the Hon. Court to take such care in all ye afore mentioned particulars as to them shall seeme meet. All which notwithstanding wee humbly submit to ye great Wisdome of this Hon. Court. Dated this 15 day of Dec. 1681. Signed by Jno. Hamond and 15 others, including Augustin Newbold.

Which Report being now read and debated, it is ordered by this Court that the said Comittee shall continue, and they are now by this Court empowered to proceed in it effectually to prosecute that affair until another Comittee shall be chosen by this Court for that purpose.

We next find in the records of the Corp., under the head of "Pamphlets," an entry as follows:

And whereas this Court did now take notice of two small pamphlets lately printed [those already noticed] tending to ye disarrangement and disability of this Citty to undertake ye said designe. This Court doth therefore refer it to the said Committee to vindicate ye Citty's reputation and credit as well against ye said pamphlets as any others that shall be pub. to the hindrance of ye said designe in such manner as the said Comittee shall think fitt.

But even this inspired no terror into the hearts of these outsiders; on the contrary, they returned to the attack, and issued broadside [No. 3] in the following form:

A Letter to a Gentleman of the Ins. Office concerning the Cities insuring Houses. The writer professes to have become a convert to this project, and against the City's, by reason of the arguments contained in one of the pamphlets we have already noticed: *An Enquiry*, etc. The writer puts forward this additional reason against the City project:

> The Magistrates of the City are intrusted with the preservation of it, and by the common law of the land, when they judge it necessary may blow up or pull down any house to stop the fire, as well as dig trenches in any man's ground in time of war to defend the City. Now, if the City insure houses from fire, this great power will be interested and consequently may be byassed: and so the magistrates no proper judges when to make use of it. For when a fire happens the magistrates may command some houses not insured by the City to be blown up only to preserve those that are not insured. And so on the contrary may omit the blowing up some houses by them insured to prevent charge to the City, which they ought to have done to stop the fire. By this means that power which should be used to prevent fires will be the occasion of their increase.

Then the Corporation, growing desperate, record the following:

And this Court likewise taking notice that divers Cittizens of this Citty are Trustees for some private persons who have undertaken to insure houses from fire, Inasmuch as such undertaking will be greatly prejudicial to this designe of the Citty, This Court is of opinion that the said Cittizens ought to decline and revoke their said trusts, and this doth desire the said Cittizens accordingly to decline and withdraw their said trusts.

With this we reach the close of the year.

1682.—The closing act of the Corp. of Lond. in the preceding year having been without avail, the only course open seemed to be that of fighting the gentlemen at the back of the Royal Exchange with their own weapons. But even here a difficulty arose. A Corp. having no individuality—no body to be kicked, or soul to be damned, as a naughty law lord once put it—an expedient therefore had to be resorted to; and the new year opened with a broadside bearing the initials L. R., and commencing as follows:

To my Honored Friend Mr. M. T., one of the Committee Chosen by the Common Council of London for the Insuring of Houses from Fire.

The writer says:

> Yours I received together with the enclosed papers about the undertaking of some private persons for insuring your houses in the City from fire, and according to your request shall give you my sentiments concerning this matter; which tho' others that know to what a master of reason I write, may call it presumption, yet your commands have made it duty and obedience. I could not but wonder that when you and the other magistrates of the City were consulting about this affair, what pretence a few forreigners and private men could have to chop in, and set on foot the same design which you were managing, not only without, but also directly against, your consent. For tho' they pretend that they were the first inventors of it, and therefore please themselves with a fond conceit that the wisdom of Parl. will allow them the sole injoyment thereof for a considerable time, if not for full 14 years: yet it is sufficiently known that this affair was propounded in your Common Council

> as early as Feb. 1670, long before ever it entered into their thoughts; and ever since from time to time continued under consideration how it might be most effectually put in practice. So that 'tis plain these gentlemen have lighted their taper at your fire, and that in more senses than one they are *building on other men's grounds.*
>
> But if they had been the first inventors of this design, yet I doubt not but I shall make it evident, that it is far more for the publick good that the City should be entrusted with the management of it, than these or any other private men: Because (1) the City can settle a better security; (2) 'tis more reasonable the City should injoy the profits arising from it; (3) it would be of ill consequence to entrust these private persons and forreigners with the management of it; and (4) it would be no prejudice to the City or citizens to have it in their own hands.

Each of these heads is enlarged upon, sometimes in not very measured language; thus under the 3rd head:

> Saith the Enquirer a private person must part with all to satisfy his debts, but in any great loss the City will rather have private sufferers than the publick. To which I answer: there is more reason to fear that these private persons, in such a case, will *insure themselves* instead of their *creditors.* They are more likely than the City to be reduced to such an exigence, as to be forced to break or compound. A little *leaky skuller* sure is more in danger of sinking in the wide seas than a large, beautiful, and well-built ship, etc., etc.

Again, and in a more reasonable tone:

> I am very well satisfied that the City of London have under their present consideration the making of certain engines, etc., for the quenching of fire; which as they will be far more useful for the publick than any that hath yet been invented, so they will be by much too chargeable for these private persons to provide themselves withal, and 'tis but reasonable that the City should have the profit of this undertaking, that so they may receive no prejudice by the charges thereof.
>
> For the quenching of considerable fires a considerable attendance ordered by authority is requisite, for otherwise the more the company the less help. Now the City have the magistracy, who by law are empowered to command constables, officers, and private citizens, as they shall judge most useful. . . .
>
> Suppose the Lord Mayor and other magistrates should think fit for the common safety to blow up a house which happens to be insured by private men, and these private undertakers minding their private advantage should be of another mind: on this competition may ensue quarrelling, blows, and bloodshed, and the two parties concerned be more zealous in opposing one another than the fire.

A copy of this will be found in the British Museum.

Whether the gentlemen of the "Fire Office for Ins. Houses," etc., as they now termed themselves, replied directly to the above in the form of a broadside, or only by way of the following short notice, which they term an advertisement, does not now precisely appear. We believe, however, this is all that followed;

> It was thought fit to give this adv., that whereas there are propositions in print, setting forth the Rates and terms for insuring of Houses—being *six-pence* in the £ rent for brick houses, and *twelve-pence* for timber, with deduction for the ground-rent, for which the office is to re-build, or to pay the party whose house is insured £100 for every £10 p.a. Rent, that is insured, as often as the said house is burnt down, according to the election then made at the time of ins. And whereas those words *Burnt down* were not so large but that they might admit of a question, whether it was intended that houses *blown up*, or pulled down, were to be re-built, or receive satisfaction, as if they were burnt down. And likewise those words did not make provision in case the houses were only damnified. It is thought fit therefore to declare, *That it is the intent of the insurers that houses insured, that are blown up and pulled down, as well as burnt down, should be re-built at the charge of the office, or receive satisfaction in money, according as in the propositions were set forth for insuring of Houses, and in a new ed. now expressed;* the former copy being since corrected, and the words added, *Burnt down, Demolished, or anywise damnified by reason of fire.*
>
> And because it might occasion some dispute about the expences of workmen in making good the damages where the house is neither burnt down nor demolished, but only broken or damnified, it is thought necessary to avoid such differences, that the office should have liberty to set their own workmen to repair all such damages; and if they are not repaired at the charge of the office within two months after the said damages made, then to forfeit the whole sum expressed in the policy, as if the same were burnt down or demolished.

A copy of the orig. is preserved in the British Museum.

The rejoinder of the Corp. came in the shape of: *A Second Letter to his Honoured Friend Mr. M. T., one of the Committee chosen by the Common Council of London for the Insuring of Houses from Fire*, in which some hard blows are dealt out. The writer commences:

> The paper which you sent me, publish't by the gentlemen of the Ins. Office behind the Royal Exchange, entituled *Observations*, etc., I have received, and carefully perused, and shall here return you some reflections upon it, which I doubt not will be kindly accepted by you, because the design of this paper is the same with that of your counsels, viz. the promoting the publick advantage of your City. I have spent some time in enquiring who were the *first inventors* of this design of insuring houses, because I find these gentlemen do with a great deal of confidence ascribe it to themselves in all those several pamphlets, which have been scatter'd (like their brains), and so industriously spread abroad by them; and especially in this in almost every paragraph of it, which I have now under examination. But herein they have done just as if a man should *filch* away a piece of plate from his neighbour, and setting his own mark upon it, should imprudently vouch himself to be the right and lawful owner of it.

Again:

> They are very forward to take money upon almost any terms, as spunges suck up water: *but the many suits that are every term between them and their creditors, who are at so much trouble and charge to recover their own*, plainly show 'tis very hard to wring and squeeze it out again. . . . Besides it would be worth enquiring whether the lands of a man, liable to a statute of bankrupt 3 years ago, can now be a sufficient security, etc.

The pamphlet is a very long and closely reasoned document, which it is not necessary to follow beyond sustaining the thread of the argument, and elucidating questions of origin, and points in practice of Fire Ins. The inquiry of the preceding writer, "what will become of your settlement if you forfeit your Charter, etc.?" is, we think, very feebly answered as follows:

> What if the sky should fall: what a loss would those have who have bought nets for the catching of

> larks? But suppose the Charter should be taken away (which God forbid), and the Corporation be dissolved, always by law those lands which have been purchased in the name of the Corp. do not go to the Crown, but return to the persons (or their heirs) of whom they were first purchased. Yet if these lands are settled before-hand upon private men, as trustees for insuring, they cannot devolve upon either, or be alienated from that use.

This document bears the initials L. R., and a copy of it is in the British Museum.

Such a warfare conducted in such a spirit was hardly suited to the dignity of the even then first commercial city in the world, and no one will therefore be surprised to learn that on the 13th day of November, 1682—just one year and one month after it had been resolved "to undertake ye insuring of all Houses within the City and Libertyes"—it was determined to relinquish the design: and the Chamberlain was instructed to repay the money which had been advanced, and then to cancel the policies!

Notwithstanding the resolution contained in the last-named minute, several policies passed the Common Seal, as late as the 6th March and 3rd May, 1683; and the City did not finally close up the bus. until an application was made to the Court of King's Bench for a *Mandamus*: which was granted, when the Corp. failing to return sufficient reasons for their practice to the Court, they were compelled absolutely to refrain from future ins. operations. From this time every exertion was made to obtain a surrender of the existing pol., and thus release the City lands from the incumbrances thereon!

We notice that one of the writers of the period charges the Corporation with "inability to repay monies secured by their bonds under the City Seal, which bonds were issued to parties who had deposited money in the Chamber of London, but who could never receive their money back; and consequently (he argues) *how can it be expected that the insured shall have better justice when a great loss by fire happens than those persons who have held the City's bonds have had?*"

Strype, who was contemporaneous with the scheme, and who afterwards edited an ed. of *Stow's Survey* (1720), gives a brief account of the doings of the City in regard to Fire Ins., and says that the project "would not take; *perhaps because the credit of the City at this time was but low.*"

In a manifesto of the Court of Aldermen, pub. in 1691, we find the following declaration as to the effect of the *Quo warranto*: "which not only put them to great charge: but ruin'd their credit, and rendered them for ever uncapable to answer those demands unless by the assistance of the Parl." We doubt whether this *Quo warranto* can be more than indirectly (if at all) associated with the Fire Ins. scheme of the Corp. We have ascertained by a careful perusal of the proceedings that no mention is made in them of the subject of F. Ins.

For a final incident in regard to this unfortunate City venture, see 1696.

A Counterpart Deed of Conveyance by the Mayor to Trustees of Estates of the City, of the supposed value of £100,000, for the purpose of protecting the pol.-holders, as recommended by the Committee of the Common Council, still exists with the Corporation Records.

A copy of the form of pol. issued by the Corp.—of which many were signed in 1681 and 1682 and some in 1683—we hope to give under FIRE INS. POL.

The sole F. Ins. Office now left in active existence was therefore that at the "back of the Royal Exchange," more usually designated "The Fire Ins. Office for Houses, &c." This Co.—from the circumstance prob. of its badge representing a Phœnix in the flames—became designated the *Phœnix* Office. Its office was afterwards moved to the "Rainbow in Fleet Street." At a later date it was called the "Old Phœnix." We designate it in these pages for distinction *Phœnix* No. 1 [for No. 2 see 1782]. This Co. was not long to remain "monarch of all it *surveyed.*" (See 1705.)

Molloy, in his *De Jure Maritimo et Navali*, etc., ed. 1682, writing upon Marine Ins. mainly, says:

> There is another Office of Ins., but that is for Houses burnt or demolished, for the Securing the Ensured in case of loss; Ground Rents to the value of near £3000 p.a. are settled on Trustees to answer the same. The prem. or rate of Ensuring an hundred pounds on Brick Houses is 8s. for one year (and double for Timber), and so in proportion for a lesser Summ; and if any insure for a longer Term, the Discount for paying down the Money is after this rate. Three years and a quarter is paid for 4 years ins. [81 p.c.], 5 for 7 years [71 p.c.], and 7 for 11 [63 p.c.]. The Money Ensured on the House is to be paid as often as the House is burnt or demolished within the Term Ensured, but if damaged then to be repaired at the Charge of the Office. This excellent Security for such misfortunes His Majesty has highly approved of in Council, and for the better encouraging the Undertakers and first Inventors, has been lately graciously pleased to grant his Letters Pattents to them for carrying on so great and good a Work for the good of the Publick.

We do not find that any patent was actually granted; and we think the facts which follow rebut the idea. (See 1686.)

1683.—At the end of this year there was issued in Lond. *A Proposal of a New Way or Method for Securing Houses from any Considerable Loss by Fire, by Way of Subscription and Mutuall Contribution.* The project was to be called the *Friendly Society.* The proposal commences:

> It is very needless sure to use any arguments to persuade the inhabitants of this great City of the advantages they may receive (as well in the quiet of their minds as in the real improvement of their estates) by having their houses secured from loss by fire: the terror of the late conflagration and its most sad and miserable effects are too fresh in the memories of those unfortunate persons who were (without any relief) sharers in that great calamity. But that being without example in some 100's

of years past, and hoping it may never be so again, we shall apply ourselves to the redress of such as may reasonably be expected every year, and that by so equal, safe, and easy a method as we hope may give satisfaction to all persons that shall be concerned therein.

1684.—The original proposals of the *Friendly So.* were amended in some particulars, and we now proceed to quote from the re-issue of Oct. 1684. The following is an abstract of the scheme:

1. Every person entering into this So. is to subscribe an instrument whereby he shall be obliged to submit to a rate or tax, the same not exceeding 30*s.* for every £100 he shall secure on any house or houses, when any fire shall happen; which money is nevertheless to remain in his own hands, but to be subject to this condition: That in case any house belonging to any one of the So. shall be burnt or damnified by, or by reason of fire, then every person of the So. is to pay such a proportion of money as will suffice to discharge and satisfie the money secured on any house so burnt or damnified.

2. Every person entering into this So. is to deposite to the undertakers the sum of 6*s.* 8*d.* for every £100 secured as aforesaid, on any house or houses, which is to remain in the hands of the undertakers as a pledge or caution for the performance of their covenants. And at the expiration of their respective terms for securing their houses, *is to be repaid by the undertakers.*

3. Every one of this So. is to pay down to the undertakers the sum of 1*s.* 4*d.* p.a. for every £100 secured as aforesaid, as consideration for their hazard, charge, and care in executing their office. So that he that will secure £300 on a brick house must pay p.a. 4*s.* to the undertakers; must deposite £1 to be paid back at the end of the term for securing their houses; and submit to a rate not exceeding £4 10*s.* to answer any loss that may happen to the houses of the So. They that secure timber houses are to pay, deposite, and be rated doubly.

There then follows this explanatory note:

The said £4 10*s.* so to be rated upon any casualty by fire for securing £300 is 45 times as much as was burnt one year with another in 15 years next after the Great Fire within the whole City of Lond. and Liberties, as by the following calculation will appear: In Lond. and the Liberties in the said 15 years there were near 100 houses burnt, which at £300 a house one with another the loss will amount to £30,000, which divided into 15 parts makes £2000 loss every year. Now to repair this loss what must every owner if they were all alike engaged in this So. pay? We answer that supposing, to keep within compass, there are in Lond. and Liberties but 20,000 houses, and they all secured at £300 a house (for that we think the best *medium*), then must the owners pay each man to discharge the £30,000 by £2000 p.a. the sum of 2*s.* p.a. and no more; which is less than men will generally give to the Briefs [FIRE BRIEFS] which happen in a year; and by this computation you may likewise see how plentiful a stock is by this method provided for securing houses from any casualty by fire. From which calculation also, it may be observ'd that the reward to the undertakers being only 4*s.* p.a. for securing £300, the very int. of £5 will by this method answer all charges of casualty, and the allowance to the undertakers to all ages, if the loss by fire be not greater than is above mentioned. But if any fire should be so great as to require 30*s.* for each £100 insured on brick houses, it shall be lawful for any member of the So. after payment of his share to surrender his policy, and receive back his deposit money, and from thenceforth to be discharged from being any longer a member of the So., if he so please. Every house of £10 rent may secure a £100; of £20 rent £200; of £30 rent £300, etc.

A deed or establishment containing the method and rules necessary to be observed in the management of this affair, is inrolled in the High Court of Chancery by the aprobation of the trustees. Such persons who are willing to enter into this So. are desired to repair to the Office in Falcon Court over against St. Dunstan's in Fleet. The persons that give the security are Wm. Hale, of King's Walden, in the Co. of Hertford, Esq., and Henry Spelman, of Lond., Esq.

From the preceding, which was literally a scheme of mutual contribution, with a very prudent limitation, it is seen how very early in the history of Fire Ins. the approximate rates of prem. required for the risk came to be understood. After 200 years' experience the rate of 2*s.* p.c. for brick houses is found to be a very fair one.

The working regulations of this Asso. were pub. later in the same year. These would be designated the "proposals" at a later date. They were as follows; and are worthy of careful study:

A Breviate of the Establishment of the Friendly So. for Securing Houses from Loss by Fire by Mutual Contribution agreed by the Trustees Inrolled in Chancery, and to be seen at large at the Office.

I.—*Imprimis*, That there shall be an office kept where any person concerned may search and take notes *gratis*.

II.—That Pol. shall be delivered, wherein one House only to be contained, in which Pol. the Trustees are impowered to Pay the Sums due, in case they be not otherwise Paid, within 60 days after the Houses are Burnt; every person receiving a Pol., doth thereby become a Member of the So.

III.—That every Member of the So. shall Pay yearly beforehand at the Office the sum of 1*s.* 4*d.* for every £100 Secured on Brick-houses and 2*s.* 8*d.* for every £100 Secured on Timber-houses by way of *Præmium*. Houses having Party-walls entire of Brick or Stone to be esteemed Brick-houses, and Houses not having Party-walls of Brick or Stone to be esteemed Timber-houses.

IV.—That every Member of the So. shall Contribute towards the making good such Losses as shall happen to any of the Houses of the Members of the said So. Provided that no Person be charged for any one Loss above 30*s.* for each £100 by him secured on Brick-houses and double so much on Timber-houses.

V.—That any Member of the So. may within 8 days after any Rate is declared, Examine the Registers, and except against the said Rate; which upon just cause or Error in Casting shall be altered.

VI.—That every Member, upon the receiving of his Pol., shall deposit as a Pledge or Caution for the Performance of his Covenants, the sum of 6*s.* 8*d.* for every £100 secured on Brick-houses, and 13*s.* 4*d.* for every £100 secured on Timber-houses; for which Receipts shall be given and Covenants to repay the same (or so much thereof as shall not be Forfeited) at the end of the Term in his Pol. expressed.

VII. and VIII.—If any Member omit or neglect to pay his Ann. Payment at the Office within 40 days after it is due, he shall forfeit 8*d.* over and above the said 1*s.* 4*d.* for every £100 Secured on Brick-houses and 1*s.* 4*d.* for every £100 Secured on Timber-houses, to be deducted out of the deposited Money.

IX.—If any Member neglect to pay his Share towards any Loss for 25 days after Publication of the Rate, he shall forfeit one-fourth part of the Money so Due over and above his said share to be Deducted out of the Deposited Money; And if he shall again make Default for the space of 3 months after Demand made in writing (to be left at his Dwelling or last Secured House), he shall from thenceforth

> forfeit the Benefit of his Pol.; his Covenant nevertheless to stand good against him for so much as shall be then Due.
>
> X.—The Acts and Covenants of the Deputies shall Charge and Bind the Undertakers.
>
> XI.—That every Member upon any Loss shall forthwith certifie his said Loss to the Office, and some of the Office shall certifie the same to the Trustees, who shall forthwith appoint some Skilful and Able Builder or Workman to View and Estimate the said Loss, and make Report, and shall set the Rate of Contribution accordingly; But if the Trustees shall omit to do so, the Undertakers with the consent of 3 or more of the Principal Members to do it.
>
> XII.—That such Workman as shall be imploy'd to Estimate the Damage of any House only Damnified by Fire, shall be obliged to Repair the said Damages at the Rate he shall value the same; in case the Party Damnified shall not be willing to take the Money at which the said Damage is valued, or the Undertakers shall not be willing to do it themselves.
>
> XIII.-The form of the Workman's Certificate of his view and Estimate of the Damages, and Examination of the Registers and of the Declaring of the Rate and Pub. it by affixing it to the Gates of the City, and other publick places, whereby it will appear that the rate is certain and not arbitrary.
>
> XIV.—That the Trustees have power to raise Money by the Rents, Sale, or Mortgage of the Estates settled upon them by the Undertakers for the payment of all sums due to any Member by reason of any Loss by Fire within 50 days after any Rate of Contribution shall be declared, if the same shall not be otherwise paid according to the true intent and meaning of the Estab.
>
> XV.—*No question to be admitted about the Description, Quality or Value of any House that shall be burnt;* but the Money in the Pol. expressed to be paid, after the Rate declared as aforesaid.
>
> XVI.—Whenever the Roof and Floors of a House from the first Floor upwards shall be Burnt or Fall in, that House to be deemed a Demolished House, and the whole sum secured thereon to be paid.
>
> XVII.—To prevent any Fraud in getting any Pol. by indirect means after a House is Burnt, *no House is to be esteemed a Secured House till the Mark hath been actually affixed thereon.*
>
> XVIII.—Watermen and other Labourers to be imploy'd at the charge of the Undertakers to assist at the quenching of Fires.
>
> XIX.—If there shall be so much Money Insured upon Houses as the Trustees shall not think the Security already given to be sufficient, the Undertakers to give such further Security as the Trustees shall reasonably require.
>
> XX.—If any one Fire shall be so great as to require 30s. for each £100 secured on Brick-houses and double for Timber-houses, to make good the said Loss; it shall be lawful for any Member, after the payment of his said Share, to surrender his Pol. and receive back his Deposited Money; and from thenceforth to be Discharged from the So. if he so please.

The "Gentlemen of the Fire Office" could no more sit quietly in the presence of this new intruder than they could under the competition of the Corp. of Lond. Hence it was hardly launched upon the world before there appeared (1684): *A Letter to a Gentleman in the Country giving an Account of the Two Insurance Offices, The Fire Office and Friendly Society.* The imaginary correspondent begins as follows:

> Yours of the 15 inst. I received; and that I might return a satisfactory answer, I have perused the settlements of both the offices, and have sent you the printed papers of both, with the observations I have made: (1) upon the validity of their securities; (2) their interest to preserve the insured from fire; and (3) the charge of insuring.

He then gives an outline of the respective schemes, as we have already done: and next proceeds to comment on the friendly or mutual scheme:

> The strength of this security stands upon this supposition, that the prems. deposited and agreed to be paid by the insured are more than sufficient to pay the loss: and therefore there is no provision made to pay those losses which may at one time exceed the prems.: For the £16,000 is not security for the losses from fire, but only for the insolvent.
>
> The insuring of houses being a new design, it is impossible to make a certain guess of the strength of this supposition; but that I might give you some satisfaction, I have examined its foundation by inquiring into the profits and loss of the Fire Office since their first beginning, which I find thus:
>
> That the *Fire Office* in 3 years hath insured 4000 houses, and the prem. of one house with another do amount to about £4 10s. the house; which in the total is £18,000, and they have already paid back in losses above £7000 besides charges. By which it is plain that they have repaid almost half the prems. before a fourth part of the terms (the houses are insured for) are expired: for some houses are insured for 7, some for 11, and some for 21 years.
>
> So that by what hitherto appears, its most probable that the prem. will not be sufficient to pay the losses; and that this design appears to be fram'd upon the imaginary success of the *Fire Office*, incouraged by the common presumption generally believed, *That men never set up a new invention without hopes of a great advantage to themselves;* and not remembering how often the first undertakers are mistaken.
>
> But supposing the prems. should be more than sufficient to pay the loss, it doth not appear to me that any man is insured for any certain term by the *Friendly So.* For how can a man be insured for 7 years, which is a term certain, when the number of those who are to pay the loss is uncertain?

The subject of this uncertainty is followed up with a good deal of ingenuity; and the writer ultimately concludes: "But the *Fire Office* is much better for the insured: for the loss is paid by the insurers, and their land is mortgaged for the payment; for there can be no *insurance* unless there be a fund setled, that is both certain and able to make good the loss." The letter is signed "N.B."—[Nicholas Barbone ?]

We may be quite sure that the "Friendly Men" would not be long in concocting a reply to this epistle, and accordingly we soon find: *An Answer to a Letter to a Gentleman in the Countrey giving an Account of the Two Ins. Offices, the Fire Office and Friendly So.* It begins:

> I have received yours of 26 Jan., being *An Account*, etc., and according to your desire return you this answer. Wherein, to observe your own method, I shall consider (1) the securities of each office, (2) the charge of insuring. And in comparing them one with another, the arguments I use shall arise from those you make in your letter to me, and the insurers of the *Fire Office* have formerly made in their papers directed to the City. . . . . . . The security given by the undertakers in the *Friendly So.*, and settled in the hands of the Right Hon. the Lord Mayor and others as trustees, amounts to the value of £16,000 in lands of inheritance, rent-charge of inheritance, and some few houses, and they do likewise give their personal security for all the money deposited in their hands to be repaid after the several terms of ins. expire, which is five parts of six of the whole of the money paid down to the insurers.

The writer enters into very elaborate arguments to answer the attack made upon the asso., and we think with pretty good success. Approaching a conclusion, he says:

> By this time I hope you are convinced that the fund in the *Fire Office* is neither greater, nor the ins. cheaper than in the *Friendly So.*, which hath been made plain to you not merely by guess and imagination, but by matter of fact. . . . . . But I wonder in reading the settlements of the *Friendly So.* you should overlook the most material articles in it; where it is carefully provided, That if the money insured on any house burnt, blown up, or demolished, be not paid by the insurers within fifty days after the rate is set, the trustees by mortgage, or sale of lands or rents, are empowered to pay the same.

The document bears the initials "H.S."—[Henry Spelman?]

1685.—After this little paper-war, the two offices appear for the moment to settle down to their work. In the *London Gazette*, No. 2049—July 6th to 9th, 1685—appeared the following:

> There having happened a fire on the 24th of last month, by which several houses of the *Friendly So.* were burnt, to the value of £965; these are to give notice to all persons of the said So. that they are desired to pay at the office in Falcon Court, in Fleet St., their several proportions of the said loss, which comes to five shillings and one penny for every £100 insured, before the 12th Aug. next.

1686.—The warfare between the two rival fire offices assumed altogether a new phase early in the present year. The managers of the *Fire Office* were determined to endeavour to secure an exclusive right under the then regulations regarding patent inventions. They therefore applied to the Lords of the Privy Council for protection, soliciting the exclusive privilege of "making and registering all assurances, pol., and contracts of houses from fire, within the Bills of Mort., for 31 years, having insured for so long time."

The Minutes of the Privy Council supply the sequel.

1687.—"Mr. Samuel Vincent and other Insurers of Houses from Fire in London, and other persons who have set up such offices, to be heard at the Boord.

At Whitehall, the 8th of Aprill, 1687. Present the King's most excellent Majesty. Upon reading the Petition of Samuel Vincent, Nicholas Barton, John Parsons, and Felix Calvert, setting forth that they and their partners, about six yeares since did Invent and set up a New Undertaking, and an Office for the Insuring of Houses from Fire, in and about the Cities of London and Westminster, and did settle three-score thousand pounds in ground rents, for the paying of losses, and have since paid for such losses twenty thousand pounds. That divers persons have set up an other Office of Ins. to the great discouragement and damage of the Petitioners, As in the petition annexed is more at large exprest. And humbly praying His Majesty to encourage their so publick and good undertaking, and to grant to them the Office of making and registering all Assu., Pol. and contracts of Houses from Fire, within the Bills of Mort., for thirty-one years, they having Insured for so long a time.

It is this day Ordered by H. M. in Councill that the Petitioners and all persons who have set any Office of Ins., and others concerned in the matter of the said petition, do attend this Boord on Friday next, at which time H. M. will take the matter of their request into consideration. (Signed) James II.

15th April.—Postponed to the following Friday, 22nd. Heard by Councill learned on both sides. Both parties ordered to present to H. M. their proposals or plans for Ins. of Houses. *H. M. hereby declaring that no such Undertaking as the said persons are concerned in, ought to be carryed on, without his royall warrant and authority.*

29th April.—Samuel Vincent and his partners presented their proposals for the Ins. of Houses from Fire, which was referred to the Lords of the Treasury to consider and report.

29th April.—Henry Spelman and his partner, Undertakers for the *Friendly So.* for Ins. Houses from Fire, presented their Proposals, which with the Petition of Sir Edmund Wiseman, Sir Charles Bickerstaff, Sir Walter Clarges, Edward Shelden, Richard Kent, and Richard Rider, were referred to the Lords Commissioners of the Treasury.

6th May.—Sent back by the Lords of the Treasury, requesting to be referred to Counsell learned in the Law. Referred accordingly to Mr. Attorney and Solicitor General.

At Whitehall, the 18th Nov. 1687.—Upon reading this day at the Boord the Rep. of His Majesty's Atturney-Generall, and Solicitor-Generall, on the Proposalls of Samuel Vincent and his Partners, who go by the name of the *Fire Office*. And of Henry Spelman and his partner, who go by the name of the *Friendly So.*, His Majesty in tenderness to the persons concerned in the promoting a design so advantageous to the publick, is graciously pleased to order that they do, on Friday next, present in writing to His Majesty in Councill, their Proposalls of Accommodation. (Signed) James II.

Ins. of Houses from Fire, to present their Proposalls of accomodation to His Majesty on Friday next.

25th November.—The Proposals of Accomodation having this day been presented, those of Mr. Vincent and his partners ordered to be given to Mr. Spelman, who is to return his answer to the same in writing to this Boord on Friday next.

2nd December.—Henry Spelman prays for longer time, his partner being in the country, very weak. Ordered to be heard on both sides on the 16th December.

Letters patent to be granted to Mr. Spelman, etc., who is to bring in a Proposall on Friday next to preserve Mr. Vincent and his partners from Ruine.

At Whitehall, the 16th December, 1687.—Present the King's most excellent Majesty. . . . . . Whereas upon the Proposalls of Accomodation between Mr. Vincent and Partners in the *Fire Office*, and Mr. Spelman and Partner on behalf of the *Friendly So.*, H. M. in Councill, on the 2nd of December, instant, was pleased to appoint the matter to be agreed this day, and both sides attended accordingly. His Majesty in Councill having fully considered what was alleaged by them, and it appearing to the Boord that the way of Ensuring Houses by the *Friendly So.* is of more benefit and satisfaction to the publick than by the *Fire Office.* H. M. is graciously pleased to declare His pleasure that Letters Patents be granted to the said Spelman and Partner as aforesaid, for carrying on their method of Ensuring Houses from Fire. And H. M. does hereby likewise order that Mr. Spelman and Partner do present a proposall in writing to this Boord on Friday next, whereby the said Vincent and Partners may be preserved from Ruyne.

23rd December.—Petition of Sir John Parsons, Samuel Vincent, Esq., Dr. Barton and Partners, together with a paper presented by Mr. Spelman and his Partner. Ordered to be heard on Friday the 13th January next, at which time His Majesty will take a final resolution thereupon. (Signed) JAMES II.

The Insurers of Houses from Fire to have a Patent.

1687-8.—At Whitehall, the 30th January, 1687.—Present the King's most excellent Majesty. The matter in difference between Sir John Parsons, Samuel Vincent, Esq., Dr. Barbone, and Partners, concerning the Insuring of Houses from Fire; and William Hale and Henry Spelman, Esq., Undertakers for the *Friendly* So., being this day heard at the Board by Councill learned on both sides, H. M. *was pleased to declare his royall intencions that he would grant his Letters Patents under the Great Seale to the said Sir John Parsons, Samuel Vincent, Esq., Dr. Barborne and Partners, for continuing the Insuring of Houses according to their undertaking*, and did order, and it is hereby ordered accordingly, that one of H. M. Principall Secretarys of State do cause a Warrant to be prepared for H. M.'s Royal Signature, directing Mr. Attorney or Mr. Solicitor Generall to prepare a Bill to passe the Great Seale authorising and impowering the said Sir John Parsons, Samuel Vincent, Esq., Dr. Barbone and Partners to continue and proceed in their method of Insuring Houses, with a clause *prohibiting the Undertakers for the Friendly So. and all others from Insuring any houses for one year after the date of the said Letters Patents.* And H. M. did further declare his intencions and pleasure to bee that after the expiration of the said terme of one yeare, the said Undertakers for the *Friendly So.*, being likewise authorized by his Letters Patents, may proceed in their method of Insuring Houses in the manner following, viz. *for the space of three moneths, and then to desist for the next three monethes, and then to begin again for three moneths more, soe as to put a stop from time to time to the said method of Ins. of the said Friendly So. every other three moneths.* And a clause is likewise to be inserted in the said Letters Patents, reserving power to H. M. to appoint such allowance or reward to be paid on every occasion of Fire by the said Sir John Parsons, Samuel Vincent, Dr. Barbone, and Partners, as H. M. shall thinke fit, *to the Gunners and others belonging to the Office of the Ordnance who shall from time to time assist in the extinguishing of such Fires.*"

Anything more weak, vacillating, and finally unsatisfactory, than this result, it is impossible to conceive. We assume the order was carried into effect, for we hear no more of either of the offices for some time. One effect of the appeal was to obtain a declaration that no such undertaking should be carried on without the Royal Warrant and authority of the Sovereign; which led up to results hereafter. (See 1720.)

The reference to the reward to be paid to the "gunners" for aiding in extinguishing fires will be further spoken of under FIRE PROTECTION.

1688.—An improved description of F. Engine is stated to have been introduced into Eng. from Holland this year. [FIRE ENGINES, MANUAL.] (See 1633 & 1790, 1829 & 1841.)

1690.—Thomas De Laune pub. a little work: *Present State of Lond.* We do not know what, if any, relationship existed between this Thomas and the Benjamin De Laune who proposed the scheme of 1667-8. But the author, speaking of F. Ins., says:

> This ingenious and usefull invention was first put into practice about 8 years ago, and is now brought to great perfection; and has deservedly met with very great encouragement, insomuch that there are now above 7300 houses insured, The rates of insuring houses from one year to eleven are, £100 on a brick house is 6*s*. for one year, 12*s*. for two years; 18*s*. for three years (and double for timber), and so in proportion for a lesser summ: but if any insure for four years, the discount for paying down the money is three years and a quarter; 5 for 7; 7 for 11 years ins. The money insured on the house is to be paid as often as the house is burnt or demolish'd, by reason of fire within the term insured; but if damaged, then to be repaired at the charge of the office. . . . . .
>
> They have a great many servants in livery with badges, who are watermen, and other lusty persons dwelling in several parts of the City, who are always to be ready, when any sudden fires happen, which they are very laborious in and dexterous at quenching, not sticking in cases of necessity to expose themselves to very great hazards in their attempts. . . . . . [FIRE PROTECTION.]
>
> Yet by both offices not above the 9th part of the houses in the City of Lond. and within the Bills of Mort., which are computed to be about 105,000.

About this date, a Mr. Alexander Cutting proposed to the House of Commons a scheme which aimed at abolishing the newly-introduced system of Fire Ins., and estab.

a sort of extended Fire Brigade and Salvage Corps combined, maintained at the expense of a municipal rate, to be levied on all houses. His plan was designated : *A method for preventing the increase of fires, the burning and stealing of goods, paying the losses and damages by fire to houses, repairing and new-building public buildings, and recompensing the present insurers of houses from fire ; all which is humbly conceived may be performed for a tenth part of the charge that is now paid for insuring.* We can only give an abstract of the several heads of this somewhat confused project :

1. That all Houses within the Bills of Mort. which pay to Church and Poor may be regis. in their books, not exceeding two-thirds of the true value of each house to be surveyed by surveyors on oath.

2. That there may be about 300 honest men to be disposed of, as the trustees and managers shall think most proper for the service. That they shall give security and take the oath of fidelity.

3. That each of these men shall have a coat and cap to distinguish them, and every one of them two buckets at their houses, which they shall be obliged to bring with them at the time of any fire, and amongst them a sufficient number of hooks, axes, and saws. . . . . .

4. That it will be of very great benefit to all owners of houses, both by raising the value of their estates and saving many of them from ruin ; and also to the Tenant by preventing that common notorious practice of stealing their goods, which sometimes proves the ruin of many of them.

5. That this may be performed at the charge following, viz. all houses valued at £50 or under to pay 1*s*. yearly, and all houses valued at above £50 and under £500 to pay 1*s*. for the first £50, and after the rate of 9*d*. p.c. p.a. for the remainder. All houses valued at above £500 and under £2000 to pay the rates aforesaid for the first £500, and after the rate of 6*d*. p.c. p.a. for the remainder ; and all houses valued at above £2000 to pay as aforesaid for the first £2000, and after the rate of 3*d*. p.c. p.a. for all sums exceeding ; so that what all small houses pay is inconsiderable, and the charge of the great houses is made easy.

6. That two-thirds of the said charge be paid by the landlord, and one-third by the tenant, to be gathered by the Overseers of the Poor of each parish half yearly, and by them paid to the trustees and managers.

7. That . . . . [an undefined part] shall be a stock to pay all losses and damages by fire to the houses.

8. That . . . . [another undefined part] for maintaining the office, clarks, surveyors, servants and firemen, and for paying for books, clothes, materials to extinguish fires, and recompensing the trustees and managers.

9. The other . . . . . to be disposed of towards the discharging the contracts of the present insurers, as the trustees and managers shall think fit, and afterwards to go to the stock aforesaid.

10. And at any time when the stock shall amount to above £ . . . the overplus to go towards the rebuilding of *Whitehall*, or building of *Greenwich* Hospital, or any other public business, as this Honble. House shall think fit.

Nothing came of this proposal.

1694.—The first imperial tax upon F. Ins. came into operation this year, under the 5 Wm. & Mary, c. 21—*An Act for Granting to their Majesties Several Duties upon Vellum, Parchment, and Paper for Four Years, towards Carrying on the War against France* ; sec. 3 of which imposes stamp duties (*inter alia*) as follows : "For every skin or piece of vellum, parchment, or sheet of paper, upon which any charter-party, *pol. of assu.*, passport, bond, release, contract or other obligatory instrument, ... the *sum of sixpence.*" This impost was not aimed at F. Ins. specially, but applied to all pol.—marine being then the most general. [The stamp duty was imposed for four years, but it was afterwards continued by several Acts, and made perpetual by 1 Geo. I. stat. 2, c. 12, sec. 8 ; then repealed by 44 Geo. III. c. 98, sec. 1.] (See 1698.)

1696.—The last act in the drama of the scheme of the Corp. of Lond. was reserved for the present year. It came upon the stage in the shape of a petition from Mr. Newbold for remuneration for the time, trouble, and expense he had been at concerning the design which had turned out so unsuccessful. This petition was referred to a Committee, who, on the 13th October, just 14 years after the resolution to discontinue, reported, and on the 8th Dec. following it was "resolved to give him the benefitt of making two persons free of this Citie by redemp. con. paying to Mr. Chamberl. in to the Citie's use of fortie-six shillings eightpence a-piece, the said persons to be the first presented and allowed of by this Court." And so finally ended the "City's Design and Undertaking for the Insuring of Houses from the Evil of Fire"!

This year [we have seen it stated 1695] Proposals were put forth by the *Amicable Contributors for Ins. from Loss by Fire*, "at Tom's Coffee House, in St. Martin's Lane, near Charing Cross, where attendance is daily given." This office afterwards became named the *Hand-in-Hand*—no doubt from the fact of two clasped hands being adopted as the trade-mark of asso., which was printed on all the early papers of the office. These proposals say :

Whereas the offices of Ins. from loss by Fire are for the private interest of the particular undertakers, who have made great advantage to themselves exclusive of all others concern'd therein. Now to the end that all persons who are desirous to Ins. from Loss by Fire may be accommodated upon more equal and advantageous terms, this office is erected, wherein all persons are equal sharers, in Profits as well as loss, in proportion to their Ins. in the same. And for security the D. of Sett. for constituting thereof is Enrolled in the High Court of Chancery ; which said D. of Sett., for the satisfaction of all Insurers therein, may be seen at the said office.

The whole charge for insuring for 7 years in this office is but 2*s*. p.c. For though every member pays down 12*s*. p.c. for seven years' Ins. of brick buildings, and double for Timber, yet at the end of the term 10*s*. is returned out of the 12*s*. for brick, and double for Timber : and for a lesser term in proportion.

There is to be a yearly Dividend of Profits arising from Int. on Stock.

The rates for both profit and loss are settled and made by the 20 Directors who are annually chose at the Gen. Meeting held in Nov., and upon just occasion any of them may be displaced : And any member within 8 days after any rate is declared may repair to the Books (which are always open gratis) and except against it and have redress.

The Fund or Stock arises from the money paid in by every insurer, and consequently increases with the number daily, and will soon be greater than in any other office whose funds increase not.

No insurer in this office is oblig'd to pay above 10s. p.c. to any loss, whereas the *Friendly So.* requires 30s.; the Deposit money in this is but 5s. p.c., whereas they take 11s. 8*d*. The ann. payments in this are but 7s. for every £100 insured for 7 years, whereas they take 9s. 4*d*., besides the int. of all the money, and return not any of it again, as the following tables demonstrate:

The *Amicable Contributors.*	£	s.	d.
There is to be paid down for insuring £100 seven years in this office	0	12	0
Contribution to losses by fires is more than paid by the yearly dividend or profits	0	00	0
	0	12	0
There will be returned at the end of the term	0	10	0
Remains expended in all, but	£0	2	0

The *Friendly So.*	£	s.	d.
There is to be paid down for insuring £100 seven years	1	1	0
Of which the annual payments for seven years are	0	9	4
Contribution to losses by fires for seven years not less than	0	7	0
Int. for 9s. paid here more than with the *Amicable Contributors* for seven years comes to, at 6 p.c.	0	3	8
Remains expended in all	£1	0	0

So that 7 years ins. with the *Amicable Contributors* will cost but 2s., and even that may be repaid by the int. of the money; Whereas in the *Friendly* So. it will cost for the same time £1 and no int. at all: By which it is demonstration, that to ins. in the *Friendly* So. is ten times dearer, than with the *Amicable Contributors*.

The confidence indicated in these early proposals was certainly justified by the subsequent results, for we observe in a later statement the following:

> There is besides a yearly dividend of profits, arising from the Int. of the Stock, which is so considerable (tho' in the infancy of the office) that it has *not only actually reimburs'd every member all contributions to fires, from the very beginning of the office, but has been a large clear gain to abundance of members in whose time no fire hath happened.*

The int. on the sum deposited in point of fact proved sufficient to provide for the losses.

As may be judged from the preceding, it was the practice of this office that when a person proposed for ins., and his risk was accepted, he paid down a gross sum proportioned to the sum insured, by way of deposit, for the whole term of 7 years, and a prem. upon the sum insured proportioned to the risk; and upon payment of such deposit and prem., and subscribing his name to the Deed, he received a pol. under the hands and seals of three of the trustees, and thereby became a member.

We intend to give a very complete hist. of this Asso.—the sole survivor of the period—under its alphabetical title, and therefore do not dwell further upon it here.

The asso. was understood in its early days to be largely supported by those engaged in the building trades. (See 1731.)

1697.—Daniel De Foe, in his *Essay upon Projects*, first pub. this year, gives the following account of the origin of F. Ins.:

> This way of assuring has also, as other arts of trade have, suffered some improvement (if I may be allowed that term) in our age; and the first step upon it was an ins. office for houses to ins. them from fire. Common fame gives the project to Dr. Barebone—a man I suppose better known as a builder than a physician. Whether it were his, or whose it was, I do not inquire; it was settled on a fund of ground rents, to answer in case of loss, and met with very good acceptance.
>
> But it was soon followed by another, by way of *Friendly* So.; where every one who subs. pay their quota to build up any man's house who is a contributor, if it shall happen to be burned. I won't decide which is the best, or which succeeded best, *but I believe the latter brings most money to the contriver.*
>
> Only one benefit I cannot omit which they reap from these two sos. who are not concerned in either, that if any fire happen, whether in houses ins. or not ins., they have each of them a set of lusty fellows, generally watermen, who being immediately called up wherever they live by watchmen appointed, are it must be confessed very active and diligent in helping to put out the fire.

In the same essay he says: "After the Fire of Lond., the contrivance of an engine to quench fires was a project the author was said to get well by, and we have found to be very useful."

There is a tradition that De Foe was interested in the promotion of the *Amicable Contributionship*; but if this be well founded, it must have been after this date: for he does not allude to that particular asso.

In the month of April this year a fire took place in a house at Westminster, belonging to a man of the name of Pemberton, which fire extended to several other houses. Pemberton was sued by a person whose house had been burnt through his house catching fire, and the Court awarded him the sum of £350 for damages. Pemberton, in order to prevent the other persons whose houses were also burnt from suing him, made the following proposal:—"That if the sufferers would sign a release to him that they would not sue him for their losses, he would lay down the money to procure the King's Letters Patent to collect the charity of well-disposed persons throughout England for their relief." Out of this transaction a pretty considerable fraud arose, and the whole matter came before Parl. We have already given a more detailed account of the matter under FIRE BRIEFS.

1698.—By the 9 & 10 Wm. III. c. 25—*An Act for granting to H. M., his Heirs and Successors, further Duties upon Stamps, Vellum, Parchment, and Paper*—a further stamp duty of 6*d*. is imposed upon pol. of assu. [This increased stamp duty was made perpetual by 1 Geo. I. stat. 2, c. 12; but was wholly repealed by 44 Geo. III. c. 98, s. 1; and 48 Geo. III. c. 149.] (See 1694 and 1711.)

1700.—There was pub.: *A Table showing the Rates of Ins. Houses from one year to seven at the Fire Office kept against the Royal Exchange in Cornhill, and at the Rainbow Coffee House by the Inner Temple Gate in Fleet Street*, viz.:—£100 on a brick house is 6s.

a year; 12*s.* for 2 years; 18*s.* for 3 years (and double for timber); and so in proportion for a greater or lesser summ: But if any insure for 4 years, the discount for paying down the money is three years and a quarter, and 5 for 7 years ins. The money insured on the house is to be pay'd as often as the house is burnt or demolished by reason of fire within the term insured. But if damaged, then to be repaired at the charge of the office.

Money.	Insured for 1 Year.			Insured for 2 Years.			Insured for 3 Years.			Insured for 4 Years.			Insured for 7 Years.		
Lib.	*l.*	*s.*	*d.*	*l.*	*s.*	*d.*	*l.*	*s.*	*d.*	*l.*	*s.*	*d.*	*l.*	*s.*	*d.*
10	0	0	7¼	0	1	2½	0	1	9½	0	1	11½	0	3	0
20	0	1	2½	0	2	5	0	3	7½	0	3	11	0	6	0
30	0	1	3¾	0	3	7½	0	5	5¼	0	5	10½	0	9	0
40	0	2	5	0	4	10	0	7	3	0	7	10	0	12	0
50	0	3	0	0	6	0	0	9	0	0	9	9½	0	15	0
60	0	3	7¼	0	7	2½	0	10	9¾	0	11	9	0	18	0
70	0	4	3	0	8	6	0	12	9	0	13	9	1	1	0
80	0	4	10	0	9	8	0	14	6	0	15	8	1	4	0
90	0	5	5	0	10	10	0	16	3	0	17	7½	1	7	0
100	0	6	0	0	12	0	0	18	0	0	19	6	1	10	0
200	0	12	0	1	4	0	1	16	0	1	19	0	3	0	0
300	0	18	0	1	16	0	2	14	0	2	18	6	4	10	0
400	1	4	0	2	8	0	3	12	0	3	18	0	6	0	0
500	1	10	0	3	0	0	4	10	0	4	17	6	7	10	0
600	1	16	0	3	12	0	5	8	0	5	17	0	9	0	0
700	2	2	0	4	4	0	6	6	0	6	16	6	10	10	0
800	2	8	0	4	16	0	7	4	0	7	16	0	12	10	0
900	2	14	0	5	8	0	8	2	0	8	15	6	13	10	0
1000	3	0	0	6	0	0	9	0	0	9	15	0	15	0	0

It proceeds:

This office having a fund to the value of £60,000 in ground rents of inheritance to answer losses and damages; and settled on several gentlemen trustees, by many of the eminentest council at law. The names of the INSURERS are:—*Sir* Edward Northey, *the Queen's Attorney General. Sir* James Butler, *Knight. Sir* John Parsons, *Knight. Sir* William Stapleton, *Knight.* Richard Alie, *Esqre.* John Pery, *Esqre.* Edward Noell, *Esqre.* Sebastian Lyford, *Esqre.* William Calvert, *Esqre.* Nathaniel Herne, *Esqre. Mr.* Edward Buckley. *Mr.* Felix Feast. *Mr.* Thomas Turnor. *Mr.* Thomas Deakins. *Mr.* George Hudson.

Attendance is given at the Exchange Office from Ten in the forenoon till Two in the afternoon; and at the Temple Office from four till 7 in the evening.

Or, if any chuseth rather to insure by mutual contribution, it may be done at the same office, by the same insurers, upon the same security, and then the rates are according to this table.

Then follows: *A Table showing the Rates of Insuring Houses from one year to seven, by Mutual Contribution; at the Fire Office kept against the Royal Exchange in Cornhill; and at the Rainbow Coffee House by the Inner Temple Gate in Flete Street,* viz.: £100 on a brick house is *one shilling, four pence,* for a year; (and double for timber) and *five shillings* for £100, brick, Deposit Money (and double for timber); and so in proportion for a greater or less sum.

Money.	Insured for 1 Year.			Insured for 2 Years.			Insured for 3 Years.			Insured for 4 Years.			Insured for 5 Years.			Insured for 6 Years.			Insured for 7 Years.		
Lib.	*l.*	*s.*	*d.*	*l.*	*s.*	*d.*	*l.*	*s.*	*d.*	*l.*	*s.*	*d.*	*l.*	*s.*	*d.*	*l.*	*s.*	*d.*	*l.*	*s.*	*d.*
10	0	0	1¾	0	0	3½	0	0	5¼	0	0	7	0	0	8¾	0	0	10½	0	1	0½
20	0	0	3¼	0	0	6½	0	0	9¾	0	1	1	0	1	4¼	0	1	7½	0	1	10¾
30	0	0	5	0	0	10	0	1	3	0	1	8	0	2	1	0	2	6	0	2	11
40	0	0	6½	0	1	1	0	1	7½	0	2	2	0	2	8½	0	3	3	0	3	9½
50	0	0	8	0	1	4	0	2	0	0	2	8	0	3	4	0	4	0	0	4	8
60	0	0	9½	0	1	7	0	2	4½	0	3	2	0	3	1½	0	4	9	0	5	6½
70	0	0	11½	0	1	11	0	2	10½	0	3	10	0	4	9½	0	5	9	0	6	8½
80	0	1	1	0	2	2	0	3	3	0	4	4	0	5	5	0	6	6	0	7	7
90	0	1	2½	0	2	5	0	3	7½	0	4	10	0	6	0½	0	7	3	0	8	5½
100	0	1	4	0	2	8	0	4	0	0	5	4	0	6	8	0	8	0	0	9	4
200	0	2	8	0	5	4	0	8	0	0	10	8	0	13	4	0	16	0	0	18	8
300	0	4	0	0	8	0	0	12	0	0	16	0	1	0	0	1	4	0	1	8	0
400	0	5	4	0	10	8	0	16	0	1	1	4	1	6	8	1	12	0	1	17	4
500	0	6	8	0	13	4	1	0	0	1	6	8	1	13	4	2	0	0	2	6	8
600	0	9	0	0	16	0	1	4	0	1	12	0	2	0	0	2	8	0	2	16	0
700	0	8	4	0	18	8	1	8	0	1	17	4	2	6	8	2	16	0	3	5	4
800	0	10	8	1	1	4	1	12	0	2	2	8	2	13	4	3	4	0	3	14	8
900	0	12	0	1	4	0	1	16	0	2	8	0	3	0	0	3	12	0	4	4	0
1000	0	13	4	1	6	8	2	0	0	2	13	4	3	6	8	4	0	0	4	13	4

The adoption of this scheme of "mutual contribution" ins. is only another evidence of the determination of these Gentlemen "against the Royal Exchange" and at the Rainbow.

1701.—On the 15th Jan. this year, a deed of indenture between John Lacy, Wm. Callow, and others, as to the treasurership of the *Amicable Contributionship*, was executed. It contained numerous details regarding a certain iron chest—as to where it was to be deposited, who was to keep the keys, who was to unlock the said chest, etc. It appeared *that the entire funds of the Contributionship were to be kept in said chest:* hence the necessary care manifested by this deed, of which a copy may be found inrolled at the Record Office.

1704.—There was founded the *Lombard House*, in Duke St., Westminster, for (*inter alia*) ins. *Household Goods* and *Trading Stock* from fire. This was a scheme of mutual fire ins. grafted upon the "Charitable Corporation" founded in or previous to this year, and chartered by Queen Anne in 1707. The first idea of the Corp. was that of assisting the industrious poor by the loan of small sums of money by pledges at "legal interest." A printed outline of the Corp. gives the following particulars of the origin of the ins. branch:

> And being desirous that their goods, which are the only fund they have to borrow money upon in their distress, may be secured against loss by fire; and also praying the said Corp. to consider of some methods for doing the same. And many substantial traders and others, being also desirous that their household goods and trading stock may be ins. against loss by fire, for their greater satisfaction at all times, the said Charitable Corp. have considered thereof, and have in general court agreed upon a method for doing the same; and have pursuant thereto executed a Deed of Sett. of Ins. drawn by advice of council, and enrolled the same in the High Court of Chancery.

Such being the origin of the ins. part of the scheme, we have now to learn something of its working details. The proposals say:

> And divers considerable persons, as well as traders, have, to their great satisfaction, already taken out pol. of ins. for goods of considerable value, which the said Corp. has ins., and are ready to do the like for any others at the rates following:—For ins. the value of £25 in household goods, wares, or merchandizes for seven years, without other or further charge, 2*s.* 6*d.* in the whole returnable with an int. at the end of the term, deducting only for losses; and after the same rate for any sum above £25, being 10*s.* for £100.
>
> *Note.*—It is very probable they that ins. of goods in manner aforesaid will be at no charge at all, but very considerable gainers, tho' losses should happen:
>
> For, *first*, the said ins. money itself is by the said Deed of Sett. made the fund for making good all losses, and will therefore be perpetually increasing, and being to carry an int. will probably from thence be able to repair greater losses than will happen.
>
> For, *secondly*, the said losses cannot be great; for the said Corp. have provided a competent number of watermen, with coats and silver badges of the figures upon this paper, carmen, with carts, and porters, who give security for their fidelity, and are always to attend at fires, to help to remove insured goods to any place desired; and have also warehouses at convenient distances from all parts, to which those that have no other convenience may send them, and have them again when the danger is over, without paying anything. And therefore, tho' for the satisfaction of all concern'd there is a covenant to contribute something further than the said 2*s.* 6*d.* if necessary, yet it does not seem probable that ever any money will be demanded upon that covenant.
>
> *And because most persons are unwilling to have their goods inspected, there is care taken in the said settlement, both to find out the true value of the goods burnt or lost; and also to detect insuring with ill designs, which being the only end of such inspection, it may resonably be concluded needless.*
>
> *Note.*—All persons pledging goods with the said Corp. may ins. them at the same time; in which case an allowance will be made for the time they remain with the said Corp.
>
> *Note.*—Goods in timber-houses pay double.

This being the first office which undertook the ins. of *Household Furniture* and *Stock-in-Trade*, it seems desirable to ascertain more in detail the regulations instituted for the protection of the office—beyond the *Salvage Corps*, by the way, the first instituted: hence we give the following outline of the provisions of the D. of Sett.:

> Art. I.—Any person paying Two Shillings and Six Pence to the Cashier of the said Corp. shall have a receipt for it, and upon delivering the same to the Committee, shall have an order gratis, obliging the Corp. to make good *two third parts* of any loss not exceeding £37 10*s.*, and so in proportion for any greater sum within 7 years.
>
> *Note.*—The whole money paid for insuring is to be repay'd with an int. at the end of the term, or so much thereof as shall not then have been pay'd for losses (vid. Art. IV.)
>
> II.—Committee to sit weekly or oftner for that purpose.
>
> III.—The place where the goods are shall be certify'd under the owner's hand.
>
> IV.—The whole money received for insuring goods shall be paid with int. at £4 p.c. p.a., by the said Corp., at 7 years end, deducting only what has been paid to make good losses.
>
> V.—Which shall be made good out of the said principal and int.
>
> VI.—And if the said principal and int. be not sufficient, the Corp., to make up the deficiency, may demand more, as far as £1 p.c. for all goods insured.
>
> VII.—But the fund of the Corp. shall be no further liable than for the said money so received, and int. thereof as aforesaid.
>
> VIII.—Sufferers receipt for money paid in manner hereafter mentioned to make good losses, shall discharge the Corp. from so much.
>
> IX.—Watermen, with coats and badges, etc., shall at the charge of the Corp. be provided to help remove goods, but shall be paid for their trouble at such fires by the Corp., who are to be allowed the same out of the money received for insuring.
>
> X.—Such as have no other place, may send their goods to any warehouse of the Corp., where they shall remain gratis two days.
>
> XI.—As soon as £1000 shall be receiv'd for ins., the insurers shall have a gen. meeting and choose 7 of their own number trustees.
>
> XII.—Trustee omitting to be present at three successive Courts of Committee met for ins., shall, unless cause shown for his absence, be removed, and his place supply'd by another member.
>
> XIII.—Trustees present at Committees, witness pol., and inspect the reports of losses, etc.

XIV.—Trustees, or any members, having paid £500 for insuring goods, may direct the Committee to call a gen. meeting, or on default thereof, order the Sec. to do it.

XV.—*Losses not to be admitted till an inventory upon oath of the quantities, qualities and real values be given in ;*

XVI.—*And the sufferer has sworn he was no way guilty of, or accessary to causing the fire, or imbezelling any goods ; and that he does not know where any of them are.*

XVII.—*And has also declared upon oath, whether the house whence the goods were lost was brick or timber, and on fire, or directly over against the house on fire, or within five houses of one of them, and that the goods are not insured in any other office.*

XVIII.—Upon notice of any loss, the Sec. of the Corp. shall summon a Court of Committee, where trustees shall be present to receive the said proofs, and adjust the payment of the money ; and publish the inventorys, with promise of reward to the discoverer of any goods said to be burnt or lost ; and also of the occasion of the fire.

XIX.—A gen. meeting of all who have paid money for insuring shall be held within 6 days after the said Court of Committee ; and if the rep. of the houses, etc., be approved, there shall be ordered one eighth part of the money to be paid immediately to the sufferer ;

XX.—And the rest after 60 days : another gen. meeting first had, the said proofs again consider'd, and allowances made for all goods then discover'd.

XXI.—Vouchers for payment shall be laid before next gen. meeting.

XXII.—The money that is claimed by any sufferer accused guilty of the fire, or imbezelling goods, or having insured elsewhere, shall be detain'd till accusation proved. *Provided accusations made at one court be proved at the next, otherwise the money shall be paid to the sufferer.*

XXIII.—*Sufferer guilty as aforesaid, forfeits his money, which shall be divided amongst the other persons insuring goods or suffering.*

XXIV.—Provision for goods pledged with the Corp.

XXV.—*No deeds, writings, or manuscripts shall be insured.*

XXVI.—No goods to be insured in any house, *save within the Bills of Mort., or within one mile thereof.*

XXVII.—*Goods in timber houses to pay double.* All houses to be rated as timber houses, unless one of the party-walls be stone or brick.

XXVIII.—Corp. and Trustees indemnify'd.

XXIX.—All insurers bound hereby.

XXX.—Any further covenant may be added by insurers, which, when sealed per Corp., and inrolled, shall bind.

No one can read these regulations without at once being struck with the appreciation of the risk of this new branch of the bus. which is displayed. (See 1710.)

1705.—There was enacted the 4 Anne, c. 14—*An Act for the Better Collecting Charity Money on Briefs by Letters Patent, and Preventing Abuses in Relation to such Charities*—of the provisions of which we have already spoken in our art. BRIEFS, F. BRIEFS. One reason why this system could not be entirely abolished was that at this date F. Ins. did not extend beyond the Bills of Mort., *i.e.* beyond the Metropolis. This was soon to be remedied. (See 1710.)

During this year those persons whom we have heretofore spoken of under the associated title of "The Fire Office" or "the Gentlemen at the back of the Royal Exchange," took a new and more distinctive title, and called themselves the *Phœnix Office.* They had, as we have already stated, from the first, adopted as their trade-mark or sign the Phœnix rising from the flames. Cunningham, in his *Handbook of London*, says : "1682. First Fire Office estab. : the *Phœnix*, at the Rainbow Coffee House, Fleet-street." This for the want of explanation has caused confusion. The explanation is that for the first 24 years the office was known simply as *The Fire Office.* (See 1682.)

On the occasion of the change of name, a fly-sheet was issued, containing (*inter alia*) the following :

> This office hath been erected, and hath insured houses for 24 years past, and in that time hath sustained losses to above £40,000 by several fires : All which hath been punctually paid by the undertakers, without suit or any other trouble. Hath a fund of ground-rents of inheritance now of greater value than £60,000 clear of any present charge, to answer all losses which shall happen, and the value of the fund increases daily as the ground-leases expire ; settled on Sir Michael Heneage, Knt. ; Sir Richard Haddocke, Knt. ; Sir Thomas Rawlinson, Knt. ; Henry Bartlet, Esq. ; Felix Calvert, Esq. ; Mr. Thomas Gilbert ; and Mr. George Buckley. By many of the most eminent Counsel at law.

1706.—About this date The *Friendly* Office issued an amended broad-sheet prospectus, under the title of "A proposal for Insuring Houses by the *Friendly* Society," which set forth the then features of the office in a style with which, in the present degenerate days, we are not familiar :

1. The sums they ins. are any number of £100, or fourth part of £100, according to the value of a house, to be survey'd by an officer for that purpose.
2. The time they usually insure for is 7 years, or (if found necessary) for any number of years less than 7.
3. All the certain charge (besides that of the pol.) is 9*s.* 4*d.* p.c. for insuring 7 years, computed at the rate of 1*s.* 4*d.* p.c. p.a. There is also 11*s.* 8*d.* p.c. to be deposited at the office as a caution, during the term any one insures for, and timber houses pay double to brick in both respects ; and those houses are accounted timber whose party-walls are so.
4. The deposited money, which is 11*s.* 8*d.* p.c., is and has always been (as appears by the books and vouchers) punctually on demand returned at (or any time after) the expiration of the pol., or so much thereof as remained unpaid by the undertakers in contribution. But the *Hand-in-Hand* return no money unless you demand it within a time limited. And the number of houses insured being very great, the contributors are inconsiderable in this office to what they are in those pretended sos. who have taken up our way of insuring, and have but few to contribute to a loss. For instance, had the loss in Derby Court been to be paid by the members of the *Hand-in-Hand*, it would have amounted to about 12*s.* p.c., which is 2*s.* p.c. more than they can pay by their settlement, and is near 9*s.* p.c. more than the rate was in this office for that fire.
5. The rates of contributions that every member is to pay to losses are made ; and those losses survey'd by warrant from the trustees, on whom the fund is settled, for securing the payment of losses ; and affidavit is made of the truth of every loss and rate before a Master in Chancery, tho' the two other offices that insure by mutual contribution make the rates themselves, and consequently may assess their members at pleasure.

6. This Office has insured since the year 1684; and hath a good land security to the value of about eight times the greatest loss it ever sustained, settled on these trustees and their heirs: The Right Hon. Sir Richard Onslow; Sir *Christopher Wren*; Sir James Smith; Sir Cyril Wich; Sir William Pritchard; Sir Edm. Wiseman; etc.; and the Deed or Sett. of the lands on them (for securing to the So. their losses when any happen by fire) was drawn by Sir Francis Pemberton, Knt., and was also perused by others learned in the law; which may be seen at the office.

7. There is also another land security lately settled by the undertakers for their duly accounting for the money deposited in their hands, which security is about four times the value of the deposit-money the Office stands engaged for; though no other office have settled any land security for insuring by mut. contribution; but pretend their deposit is a security for their making good all losses: whereas in truth they ought to give a land security, as here there is, for returning that deposit, it being to lie so long out of the owner's hands, and a moveable that may be embezzled, as might easily be shown by several precedent examples of a late land bank, etc.

8. The undertakers of this Office have paid, to make good losses by fire, since they first insured in the year aforesaid, many large summs of money, which shows what a considerable advantage this City has reaped by this Office, who have insured for little more than the int. paid in the *Phœnix*.

9. They also keep in livery, with silver badges, about 20 men, who, on occasion, have power to employ any other number that may be necessary, to extinguish fires, and are all at the charge of the undertakers, and not of the members of the So., as it is in the *Hand-in-Hand* Office, by the 31st article of their establishment.

10. If any house insured be demolished by or by reason of fire (which it is accounted to be, when the floors from the first floor upward and roof are burnt or fallen in), the whole sum insured is paid in 60 days after, or sooner if found requisite; but if a house is only damnified, the Office do immediately repair and put it in as good condition as the same was when insured, upon notice of such loss given at the Office.

Note, that what the *Phœnix* Office pretend as to contributions being less in their Office than the *Friendly* So., for the same loss, it is utterly false and an imposition on the publick; the So. having the *Phœnix* own accounts to show the contrary.

Note Also, that the *Phœnix* Office never settled any fund for insuring by way of contributing, and their other way is 30*s*. p.c., and not a farthing returned; but the *Friendly* So. covenant to return 11*s*. 8*d*. of every 21*s*.

Note thirdly, that on these and other accounts one of the *Phœnix* principal proprietors insured near £8000 in the *Friendly* So., as another of their undertakers (lately deceased) did several hundreds.

And there are several advantages besides those above, by insuring in this first So. of mutual contributors. For tho' as to the charge in two offices that do both insure by mutual contribution of their members; that will probably be the cheapest which hath the smallest loss in 7 years; and that dearest that hath the greater loss: so that it can be no more affirmed, which office will be cheapest to insure in than it can be foretold what fires will happen, which is all casual and uncertain; yet this is very certain, that the *Friendly* So.—1. Have two good funds in land, and the *Hand-in-Hand* none. 2. Can make good by their settlement 3 times the loss that the *Hand-in-Hand* can do by theirs, besides what they exceed them both in fund, and number of houses to contribute. 3. The members of the *Friendly* So. contribute to no charges either of cashiers, accomptants, surveyors, water-men, office rent, taxes on the office, etc. But they that insure their houses in the *Hand-in-Hand* do contribute to all these and other incident charges, which will be found more than their airy pretence of profit can amount to. 4. The undertakers of the So. charge their real estates by signing their pol.: but they that sign for the members of the *Hand-in-Hand* are obliged to nothing thereby, as ingaging neither their real nor personal estates by such act, and consequently their pol. are of little value. (See their pol., which only appoint the directors to pay what is not in their power, as having no lands settled on them to pay losses with.) 5. The members of the So. by insuring as above can be liable to no forfeitures: but those of the *Hand-in-Hand*, by omitting payment of contribution a few days, forfeit double the rate with all their deposit and benefit of insuring, as appears by their settlement, Art. 23.

Attendance is given in Palgrave Court without Temple Bar, between 9 and 12 in the morning, and 3 and 7 in the afternoon. And entries of houses to be insured are taken at Bridge's Coffee House against the Royal Exchange in Cornhill, and pol. are prepared accordingly at any time required.

☞ Upon sale or mortgage of houses insured, the pol. are to be transferred, and the transfer regis. at the office, for the better security of both parties; and to prevent all disputes between the buyers and sellers or mortgageors and mortgagees.

The *Phœnix* made the following terse reply:

PHŒNIX OFFICE.—Houses are insured at the *Phœnix* Office for a certain sum without any *contribution* or *contingency* whatsoever. And also by ***mutual contribution***. And that people may not be imposed on by untrue insinuations and calculations, the following account is the true and real difference between insuring by mutual contribution:

	At the *Phœnix* Office.			At the *Friendly* So. Office.		
	£	*s.*	*d.*	£	*s.*	*d.*
Viz.: In defraying all office charge for 7 years—each £100 pays	00	7	00	00	09	04
Deposits	00	5	00	00	11	08
Contributions to a loss of £323 in Wapping, in April, 1703—each £100 insured to pay...	00	00	4½	00	00	08

	Phœnix Office.	*Friendly* Society.
Security in ground rents to make good all losses happening to any houses whatever insured at the Phœnix Office	£60,000	£12,000

Note.—The *Friendly* So. alledge they have now insured 16,000 houses, which is a false suggestion; for in September, 1704, the ins. of more than 11,800 of the said 16,000 expired, which occasions the difference aforesaid in the contribution. *Note.*—This Office insures for the same money as the *Amicable* So. or *Hand-in-Hand* Office, who have settled no real fund for payment of such losses as may happen.

It was during this year that Mr. Charles Povey—a name in some respects great in the annals of Fire Ins.—set on foot his scheme known as the *Exchange House Fire Office*, in Hatton Garden. It appears to have been entirely a "one-man" enterprise: for—notwithstanding the allusion to "governors and directors" in some of the adv.—Povey underwrote and issued fire pol. on his own responsibility. He appears to have been the inventor of a fire annihilator; and is believed to have been led to consider the subject of Fire Ins. in that connexion. We meet with no details of his Ins. scheme until 1708, and then they are very meagre. (See 1708 and 1710.)

1707.—It is stated in the *Post* of 24 Aug. this year, that it was the practice of the Irish Peers "to insure their robes"; but where or how this was managed does not appear.

1708.—There was pub. this year a species of newspaper: "The *General Remark, or Miscellanies*, set forth by Mr. Povey in Hatton Garden." The copy before us is No. 440, "from Wednesday 22 to Friday Dec. 24th, 1708." In the left-hand corner is a picture of a house on fire; on the right-hand, a drawing of the "Exchange House." After several cols. of general news, we come to a col. headed: "From the Exchange House," wherein is the following:

> The following scheme having been laid before all the governors and directors of Mr. Povey's Ins. of Goods from Loss by fire, the same is with their approbation now made publick, and will forthwith be put in execution.
>
> Whereas it has been sadly experienced that in the time of any conflagration more moveable goods, merchandizes and wares have been lost by thieves and for want of present help to remove them than have been either burnt or damaged by the fire itself; and since no expedient has hitherto been made use of to prevent so publick a calamity that has undone many flourishing families, the following method is now thought of which will effectually relieve all sufferers in this case for the time to come, viz.:
>
> I.—That every person who already has or shall at any time hereafter subscribe to Mr. Povey's *Proposals for Insuring moveable goods, merchandizes, and wares from Loss and Damage by Fire*, shall have a mark representing the *Sun* nailed up against their houses; which mark is to be numbered with the number of the subscriber's pol., and there to remain so long as the subscribers continue to pay their quarteridges. But if any of the said subscribers fail to pay their quarteridges when due, then by the order of Mr. Povey the said mark shall be taken down from the house of the person so omitting to pay his or her respective quarteridge as aforesaid.
>
> II.—That Mr. Povey provide a sufficient number of able-bodied men to be chose out of different parishes in the Cities and suburbs of Lond. and Westminster, that they may be ready at hand to give immediate assistance wherever a fire shall break forth, in removing and securing the moveable goods, merchandizes and wares of all such subscribers who have the before-mentioned mark fix'd on their houses. And that the persons thus appointed may be the more useful, care shall be taken to engage men of different trades, viz. upholsters, packers, wine-coopers, carpenters, smiths, and such like artificers who understand taking down and removing all manner of household furniture, wares and merchandizes with speed and the least dammage. All those persons shall be called the Exchange House men, and allowed a yearly salary by Mr. Povey at his own proper cost and charge.
>
> III.—That to prevent all frauds and cheats which may otherwise happen, every Exchange House man at his first admittance shall bring a certificate either signed by the minister and churchwardens of the parish where he lives, or by six reputable housekeepers in the neighbourhood, to testifie that he is a faithful and honest man, who may be trusted in any important affair; which certificate so signed as aforesaid shall be filed up at the Exchange House. This done, every Exchange House man's name and place of abode is to be entered in a book at the office, and he is to have given him in a little box to carry in his pocket a small parchment certificate with the same coat of arms printed thereon as is affixed to every subscriber's pol. and the following words: "These are to certifie that the bearer hereof A. B. by name is an Exchange House man, who is authorized by these presents so soon as he hears the cry of Fire in the streets to call together the rest of his company and forthwith repair to the place where the said fire is; and the house or houses that are so on fire or in danger of fire on which the Exchange House mark is fixed; then he and his company are to call at such house or houses and show the master or mistress of the same this parchment certificate, and offer assistance in the removing and securing of all such inhabitants moveable goods, merchandize and wares." The said parchment certificate is also to be signed with Mr. Povey's own hand and number'd 1, 2, 3, etc., according to the number of men employ'd, which will be of as good use to the sufferers as the numbers of hackney coaches are in other cases; to the end that if anything miscarries, it may be charged on the right person.
>
> IV.—That any subscriber living near the place where a fire shall happen may employ as many of the Exchange House men as he thinks necessary for removing and securing his or her moveable goods, merchandizes and wares; taking notice at the same time of the number of the parchment certificate, which every one carries in his box about him as is before mentioned; and that the said sufferer pay to such Exchange House man he so employs the sum of 5*s*. for his labour; and the said Exchange House man shall be obliged (if necessity require) to work 12 hours for the said 5*s*., which money so given by the sufferers for removing and securing their goods is to be reckoned into the loss and dammage they sustain, and will be repaid them when they receive their dividends.
>
> V.—To the end that all subscribers may be certainly assured of immediately receiving this proposed assistance at a fire, every Exchange House man is upon his admission to bind himself under a penalty to aid and assist no person or persons whatsoever at any fire, either in removing or securing his, her, or their moveable goods, merchandizes, and wares, upon any pretence or offer of reward whatsoever; but only such as have the Exchange House mark against their houses. *Note.*—Care will be taken to obtain protections of the Gov. to keep the Exchange House men from being impressed or otherwise molested in their business.
>
> Now the benefits which will redound to the inhabitants of the Cities and suburbs of Lond. and Westminster by the above-mentioned methods will be manifold, but chiefly these, viz.: 1. It will very much lessen the particular losses of every individual subscriber who is a sufferer, so that the cash in stock will go much further than it would otherwise do; by which means the sufferers would be morally certain (though his or her stock be worth five or ten thousand pounds) of having their whole loss and dammage retriev'd. 2. It will greatly encourage the sufferers by their having immediate assistance at such a time of distress. 3. It will disappoint thieves and ill-designing men who come at such a time on purpose to get a booty and do mischief. 4. It will remove a difficulty that may be put upon the Exchange House, in clearing itself from paying for goods that were stolen, as well as burnt, for want of due proof in the case. 5. It will be of singular advantage to all merchants, wholesale dealers, and others who have great stocks of cumbersom and combustible goods; because, by the means of such a timely assistance, all, for the most part, may be sav'd; whereas otherwise two or three thousand pounds worth or more of merchandizes and wares may be lost or consumed by the flames.

Then the following more special notice:

> All subscribers to Mr. Povey's Proposals of Ins. upon Lives, and also those who have taken out policies for insuring their goods from loss by fire, are hereby desired to take notice: That according to the Articles in the said Proposals, every subscriber is obliged to bring or send his or her quarterly payment, and the number writ upon his or her pol. or policies every quarter to the Exchange House. *And these are further to give notice: That there has hitherto happened no fire amongst any of the subscribers to the Proposals for Insuring of Goods, etc.*, so that all the moneys ever yet paid in and put into the chest remain entire as a stock for the relief of the first sufferers; but in the Ins. of Lives there has happened several deaths, and the claims will be paid to the nominees of the said

deceased subscribers on Tuesday, 6th January following. *Note.*—At Lady-day next *claims in the Ins. upon Lives* will be double to what they were at Michaelmas last; the undertaking so much improves since the publication of Mr. Povey's Proposals for Insuring Goods from Loss by Fire.

This undertaking comes before us again in a fresh aspect in 1710.

1709.—In this year was set on foot the *Co. of London Insurers;* but it did not get fully organized until the following year.

In the *Postboy*, 2 June, 1709, was an affidavit by Edward Hatton, who had been Registrar to the *Friendly* So. for Ins. Houses for 18 years, to the effect that since the 1st April, 1703, more than £3400 had been received and paid on renewing. This affidavit was made because some one had said that the deposit-money was not paid back to members as agreed.

1710.—This year stands out as another land-mark in the history of Fire Ins., for in it was completely founded the *Co. of London Insurers* (whose operations had commenced in the preceding year), now so familiarly known as the *Sun* Fire Office. We may refer the reader back to 1706, where we first introduce Mr. Charles Povey; and again to 1708, when some portion of his Fire Ins. scheme comes before us; and we must then ourselves fall back upon Maitland's *Hist. of Lond.* (pub. 1739), wherein we find it tersely recorded as follows (p. 633):

"Povey having for some time carried on his project [The *Exchange House* Ins. Office] with success, dispos'd of the same and convey'd his right therein to certain purchasers; who by a Deed of Sett. of the 7th April, 1710, erected themselves into a society by the name of 'The *Sun* Fire Office for Ins. Houses, Goods, Wares, and Merchandizes from Loss and Damage by Fire.'"

In the *British Mercury*, 27th March this year, the newspaper pub. by the managers of the *Sun* Fire, it is announced: "In a few days the Co.'s pol. will be ready and delivered *gratis* to all persons who had subscribed to the *Exchange House* Fire Office, and continue to ins. their houses and goods from loss by fire with *The Co. of London Insurers*, they only paying the quarterage as usual." The top of the paper was ornamented with a bold sun resembling the present fire-mark of the *Sun* Office.

On the 10th April this year "Proposals" were set forth by the "*Co. of Lond. Insurers* for Insuring Houses, *Moveable Goods*, *Merchandizes*, *Furniture* and *Wares*, from Loss and Damage by Fire." These commence:

Every person within the Weekly Bills of Mort. of Lond. who shall take out a pol. signed by three or more of the members of the Co. of London Insurers, and seal'd with the Co.'s common seal, in form as is hereafter specified, paying 3*s*. 6*d*. for the same, whereof 1*s*. is the stamp duty, and the half-crown for the 1st quarter, shall be entitled to the benefit of having his or her loss and damage by fire, whether in his or her house or moveable goods, merchandize, wares, furniture, etc., under one roof, repaired and made good to him or her by the said Co. according to the following articles, continuing to pay 2*s*. 6*d*. per quarter.

We do not give details of this first set of proposals for the reason which next appears.

On the 30th Aug. same year, the "amended or settled proposals of the Co." were issued. Those just quoted had confined the operations of the Co. to the "Weekly Bills of Mort. of Lond." *The new Proposals took a much wider range, in fact changed the scene of operations altogether, for they now proposed to insure* "in any place within Gt. Britain *out* of the Cities of Lond. and Westminster and the Liberties thereof." This alteration was no doubt the result of arrangement with some of the then existing offices, with a view to avoid competition.

As this office has since occupied a prominent place in the hist. of Fire Ins., we propose to give the settled scheme in detail—the more so as it had the risks attending its larger range of operations to grapple with:

Art. I.—Every person in any place of Gt. Brit. who shall take from the Co.'s agent a pol. sign'd by three or more of the members of the *Co. of Lond. Insurers* and seal'd with the Co.'s common seal in form as is hereafter specified, paying Four Shillings for the same, whereof One Shilling is the stamp duty and 3*s*. for the first quarter, shall be entitled to the benefit of having his or her loss and damage by fire, whether in his or her house, moveable goods, merchandize, wares, furniture, etc., repaired and made good to him or her by the said Co., according to the following articles, continuing to pay only 3*s*. *per* quarter.

II.—No person insured shall ever be liable to make any further payment or allowance towards repairing the loss and damage of any sufferer.

III.—*Every person who shall thus take out a pol., shall, besides the benefit of insuring his or her house or moveable goods, have left at his or her friend or correspondent's house in Lond. within the Weekly Bills of Mort. the printed newspaper called the* "British Mercury," *pub. three times a week, containing all foreign and domestic news, an account of rising and falling of public stocks, payments at the Exchequer, course of the Exchange, post-letters, price-courant of merchandizes, corn, hops, coals, and other commodities* (as they are then sold in *London*), *with whatever else shall be thought proper to entertain the publick.*

IV.—Every person insured shall have the mark of the SUN fixed upon his house *gratis*.

V.—Every one that would insure both his or her house and goods, etc., *must take out distinct policies, which shall extend only to what belongs to one tenement;* and he or she shall be intitl'd to a newspaper for each pol.

VI.—These Proposals do extend to insure all merchandizes, wares, household goods, furniture, etc., excepting money, plate, jewels, pictures, china wares, tallies and writings.

VII.—*Towards raising a sufficient fund for making good all sufferers' loss and damage by fire, one shilling shall be reserv'd out of every quarteridge, which shall be receiv'd both in Lond. and other cities and towns of Gt. Britain, which in the whole will amount to a very considerable sum—much more than sufficient, according to an accurate computation, to make good each sufferer's whole loss and damage.*

VIII.—The true intent and meaning of these Proposals is, that all the money reserved in bank, according to the last preceding art., *shall be equally divided within* 10 *days after each quarter-day among the sufferers, in proportion to their respective losses, not exceeding £*500 *for each pol.;* and when no fire happens, then the whole sum to be lodg'd in the Bank of England till the next fire. And that every sufferer may be sure to have the whole sum reserv'd in bank, he or she, or any one by his or her order, may peruse the pol.-book kept at the Co.'s office, Lond., where the No. of pol. deliver'd out will appear, and consequently the sum reserv'd in bank for payment of claims.

IX.—As soon as any person insured shall have his or her house or goods damaged by fire, he or she is to give notice to the Co.'s agent, from whom they had their pol. And within 10 days after every quarter-day there will be a gen. court held at the Co.'s office in Lond., where all claims and losses by fire will be always faithfully paid to the sufferer, or his lawful attorney, according to the tenor of these proposals.

X.—When any sufferer receives his or her claim, 5 *p.c. shall be deducted out of it for defraying the charge and expences of officers and others employed to make enquiry how and by what means the fire happen'd, as is usual in other fire offices.*

XI.—Every sufferer must make out his or her loss and damage upon oath before a mayor or chief magistrate of the next adjoining town, *in presence of the Co.'s agent,* within 10 days after the fire, and carry that affidavit to the minister or churchwardens of the parish in which the fire broke out, and some other eminent housekeepers of the said parish, especially such as live near the place where the fire began, but have themselves sustained no damage thereby, and are best acquainted with the person, reputation, and circumstances of the said sufferer, who shall sign a certificate that they do know or believe nothing to the contrary but that the sufferer has really and by misfortune lost by fire the sum mentioned in his affidavit; upon sending up which affidavit and certificate to the Co., he or she shall receive his or her claim; *but if there appears any fraud or perjury in such sufferer, he or she shall be excluded from any right or interest in these Proposals.*

XII.—If any person insured removes his or her habitation, he or she must give notice, and have his or her pol. changed by the Co.'s agent, paying the stamp duty only.

XIII.—Every person insured shall pay his or her quarteridge to the Co.'s agent within 10 days after every quarter-day, upon forfeiture of his or her pol. and the Sun-mark, which the said agent shall have free liberty to take down.

XIV.—When any person pays his or her quarteridge, a printed receipt will be given for the same, sign'd by the Co.'s agent.

XV.—Every person insured may relinquish at pleasure, and if he or she dies, the interest in his or her pol. shall continue to his or her executor or administrator so long as they continue to pay their quarteridge.

XVI.—Any person desiring to insure either his or her house or moveable goods without having the *British Mercury* shall pay but 3*s.* 6*d.* for his or her pol. and first quarter, and be intitled to all the other benefits above mentioned, continuing to pay 2*s.* 6*d.* p. quarter.

The form of pol. is then set forth. This we shall give under FIRE INS. POL.

Finally: "The names of the Twenty-four Members of the Co. are to be seen at their Agent's House, Mr. —— in —— where the Pol. may be taken and the Quarteridge paid."

There are several noticeable points in reference to this Co. In the first place, the promoters call themselves the *Company of London Insurers*; but from the first they had adopted the figure of the *Sun* for their trade-mark, and hence they speedily became known solely by that name. In the next place, no ins. was to be accepted for a greater sum than £500, and there was no guarantee that a loss up to that, or indeed any smaller sum insured would be actually paid. It would be paid only upon condition that at the end of the quarter there would be money enough in the Bank to pay all the losses of that particular quarter. This might have worked exceedingly inconveniently in the case of a very large fire occurring in any particular quarter. We believe as a matter of fact the Co. did from the beginning pay its losses in full.

The Co. was also the first which undertook the ins. of household furniture and effects, and goods and merchandize generally, and throughout England—except the Metropolis.

At a very early period the managers of the Co. evinced a determination to take a leading position in regard to the bus. of F. Ins. This they succeeded in obtaining, and in retaining for fully a century. In our art. F. INS., CONDITIONS OF, we have shown how much the Co. contributed to make the contract of F. Ins. understood and respected.

In our hist. of the office under its alphabetical title, we shall have many further details to add; and in the course of the present work it comes up before us again and again.

It may be convenient to state at this point that the system of quarterly prems. was discontinued in favour of ann. ones about 1726.

It will not fail to be noted that in the scheme of a quarterly division of assets to defray loss, the Co. followed in the wake of the *Amicable* Life, founded 5 years previously. (See 1726 and 1727.)

1711.—The first express legislative recognition of F. Ins. is made by 10 Anne, c. 26—*An Act for laying add. Duties on Hides and Skins, Vellum and Parchment, and new Duties on Starch, Coffee, Tea, Drugs, Gilt and Silver Wire, and* POLS. OF INS., *to secure a yearly fund for satisfaction of orders to the contributors of a further sum of £*1,800,000 *towards H.M. Supply; and for the better securing the duties on candles; and for obviating doubts concerning certain payments in Scotland, and for suppressing unlawful lotteries, and other devices of the same kind; and concerning cake sope; and for relief of Mary Ravenall, in relation to an ann. of £*18 *p.a.; and concerning prize Cocoa nuts brought from America; and concerning tickets which were intended to be subscribed into the stock of the South Sea Co.; and for appropriating the monies granted in this Session of Parl.;* the following sec. of which relate to our subject:

67. And be it further enacted by the authority aforesaid, that there shall be raised, levied, collected and paid, to and for the use of H. M., her heirs and successors, for and upon every Pol. of Assu. which shall at any time or times within or during the term of 32 years, to be reckoned from the 1st day of

> August, 1712, be made or entered into within the Cities of Lond. or Westminster, or elsewhere within the limits of the Weekly Bills of Mort., the sum of 2*s.* 4*d.* over and above all such duties as are already chargeable upon the same, by any Act or Acts of Parl. formerly made in that behalf [only that of 1694].
>
> 68. And be it declared and further enacted, that all deeds, instruments, and writings for the payment of any sum of money upon the loss of any ship or goods, *or upon any loss by fire*, or for any other purpose for which any writing, commonly called a Pol. of Assu. or Ins., is or hath been usually made, shall be construed, deemed, and ajudged to be a Pol. of Assu. within this Act, and to be charged with the duty last mentioned.

This made the stamp duty on every F. pol. issued 3*s.* 4*d.* The Commissioners of Stamps were to manage these duties. The vellum was to be stamped before the ins. was written thereon (sec. 70). For writing the ins. before stamp, penalty £5, and pol. not available in Law or Equity until penalty paid, and also stamp duty (71). Counterfeiting stamps a felony (73). (See 1698 and 1713.)

On the 2nd May, this year, a remarkable scheme of Fire, Life, and Marine Ins. was issued from "Bourne's Coffee House, Finch Lane, Cornhill." The portion relating to *Fire Ins.* was as follows :

"Ann. proposals to shopkeepers and tradesmen, etc., for a provision on loss by fire and for relief of decayed tradesmen, etc., *Wherein every contributor by paying* 6*s. ann. becomes entitled to receive the value of* £100 *loss sustained by fire; and if no loss by fire happen, then such contributor being by decay of trade or other misfortune brought to penury and want, to be relieved out of the joint-stock of this So.*"

This was perhaps the earliest attempt at combined Ins. and Philanthropy on record. We almost trace the hand of the famed Charles Povey in this project.

1713.—The legislature again favoured Ins. Pol. with its polite attention. By the 12 Anne, stat. 2. c. 9—*An Act for laying add. Duties on Sope and Paper, and upon certain Linens, Silks, Calicoes, and Stuffs, and upon Starch and Exported Coals, and upon Stampt Vellum, Parchment and Paper, for raising* £1,400,000 *by way of Lottery for H.M. Supply: and for allowances on exporting made wares of leather, sheep skins, and lamb skins, and for distribution of* £4000 *due to the officers and seamen for gun-money; and to adjust the property of tickets in former lotteries; and touching certain shares of stock in the capital of the South Sea Co.; and for appropriating the moneys granted to Her Majesty*—it is enacted under sec. 21, that "for every skin or piece of vellum or parchment, or sheet or piece of paper, upon which shall be engrossed or written in Gt. Brit. any Indenture, Lease, Bond, or any Deed not hereby otherwise charged, the sum of 6*d.* stg." for 32 years. The stamp duty on every pol. was therefore now raised to 3*s.* 10*d.* (See 1711 and 1757.)

1714.—This year proposals were issued for founding the "*Union, or Double Hand-in-Hand Fire Office*, for insuring *Goods and Merchandizes* by mutual contribution, in the way of the *Hand-in-Hand* Office for Houses." The terms and methods for ins. were to be as follows :

1. To insure for all Merchants, Traders, House-keepers, and fixed inhabitants within the Cities of Lond. and West., and Bills of Mort.

2. To insure merchandizes, moveable goods, wares, utensils, and implements in trade, household goods, furniture, and such like things; except ready money, jewels, glass, china-ware, and also except plate and pictures not in trade, books of account, tallies, bills and notes, with all other writings whatsoever.

3. To insure for 7 years or any lesser term at the election of the person insuring.

4. To insure answerable to the value of goods, etc., for any sum not exceeding £1000 in any one house, warehouse, yard, wharf, vault, or cellar.

5. Every person insuring for 7 years to pay for each £100, and proportionably for any greater or lesser sum (beside the stamp duties, pol., and mark), 2*s.* prem., and 10*s.* deposit, which will be return'd at the expiration of the pol., together with a dividend of profits in the mean time made, after deduction of losses and incident charges only. And beyond this deposit no one to be answerable for above 10*s.* p. £100 in case of the utmost loss.

6. Every person desiring to be insured to pay down 10*s.* earnest, for which he will have a receipt; and the same will be allow'd as part of his ins. money.

7. Constant attendance is now given at the office in Gutter Lane (leading out of Cheapside to Maiden Lane), at the house wherein Sir Edward Clark, late Knight and Alderman, dwelt. Attendance is also given at the Amsterdam Coffee House behind the Royal Exchange, on Tuesdays and Fridays in the afternoon. At both which places proposals and an abstract of the Deed of Sett. may be had *gratis.*

It will be observed that the Asso. did not as part of its orig. scheme ins. *Houses or Buildings* of any description. It was formed on the model of the *Hand-in-Hand;* and there appears reason to suppose that, the last-named Asso. limiting its ins. to Houses and Buildings, the two Asso. worked literally hand in hand together : one taking the buildings, and the other the contents.

The Asso. was purely mutual—the insured parti. in profit or loss in proportion to the amount insured ; and did not at its commencement extend its bus. beyond the metropolis. At a later date its operations were extended 20 miles beyond.

1715.—It appears that the scheme of the *Union* Fire Office, founded last year, underwent some change from the purely mutual plan—to the extent of having a subscribed Guarantee Fund—at an early date, for in the *Courant* of 19th Jan. this year appeared the following advertisement : .

> Whereas, several citizens have agreed to join in a So. (called the *Union* Fire Office) for insuring of goods and merchandizes from loss by fire, in the way and upon the like terms with the *Hand-in-Hand* Fire Office, which is purely calculated for the publick good, and not for the private advantage of any particular persons : Notice is hereby given, that considerably more than the sum at first proposed being already subs., this So. will be speedily formed, in order to the delivering out of pol., etc., and that in the mean time further subs. are taken only at the following coffee houses, viz.: Tarrant's, within Aldgate ; Amsterdam, behind the Exchange ; Sam's, in Ludgate Street ; and the *Hand-in-Hand Fire Office, in Snow Hill.*

The Deed of Sett. of the So. was dated 16th Feb. $17^{14}/_{15}$ [inrolled 3rd July, 1715], a few of the provisions of which we shall here pass under notice. It recites :

> Whereas the ins. of houses from loss by fire, of late years practised, hath proved greatly useful and advantageous to the publick ; and the methods and proceedings of the *Amicable Contributors*, or *Hand-in-Hand* Fire Office, herein, being founded on an equal foot of profit and loss, hath particularly met with a general acceptation : And it is obvious that not only ourselves, but the traders and inhabitants of the Cities of Lond. and Westminster and parts adjacent, in general are very desirous of insuring their *goods* as well as houses from loss by fire ; and in view and consideration thereof, we apprehend that the like methods with those of the *Hand-in-Hand* Fire Office put in practice for the ins. of goods, manifestly tending to the equal and common advantage of all that shall so insure, will be no less acceptable and serviceable to the publick, etc., etc.

It is then agreed to form and settle a voluntary office, so., or mutual contributionship, by the name or style of the "Union So. for the Ins. of Goods and Merchandizes from the loss by Fire within the Cities of Lond. and Westminster and Bills of Mort.," in a method resembling that of the *Hand-in-Hand ;* and to be and continue contributors unto, and equal sharers in the losses as well as the gains and advantages arising, accruing and happening in and by the same, upon the terms, etc., in the said deed contained. Then follow the ordinary provisions as to appointment of directors, and managing the bus. We need only glance at the more special points—the novelties !

Under the head of "Earnest money" it is provided that all and every person and persons applying to the office of this So. for ins. should, before the surveying of his, her or their goods or merchandizes, pay 10*s.* p. pol. earnest money towards the charges of the stamps and other incident matters (sec. 11).

Removals, transfer of pol., or death of the insured, were respectively "remedied" by indorsement, the pol. having to be delivered at the office within 30 days for the purpose. *Double ins. made the pol. void* (12).

On alarm of Fire the directors were to meet with all convenient speed at their usual place of meeting to consult and determine upon such methods as would conduce to the safety of the So. and the service of the public (15).

The directors were with all convenient speed after loss sustained to meet and settle the rate of contribution, and notify the same in their office and in the *Gazette and publick newspapers*, and in such other way as they should think fit. When the loss was £50 or upwards, the rate of contribution to be settled by two board meetings. Any member feeling aggrieved might inspect books, etc. (16).

The So. to have power to make by-laws (31). Then the following remarkable provision (31) :

> *Item.*—That for the maintaining of a good agreement with the *Amicable Contributors*, or *Hand-in-Hand* Fire Office, whose happy contrivance and foundation is in this present undertaking adhered to and imitated, and from which we the subscribers hereto promise ourselves much success and advantage in conjunction with the publick, and for the avoiding and preventing all the inconveniences which may anywise happen or arise by the mixture of different kind of ins.: *we the same subscribers and every of us with one unanimous voice and consent have resolved, and hereby resolve and declare that this So. will not nor ever shall take in or intermeddle with the ins. of any houses, buildings, chambers, or rooms whatever ;* but only with the merchandizes, wares, goods, or other like effects, which may be in or belonging to such houses, buildings, chambers or rooms. Which it is hoped will be so far from prejudicing in the least the said *Amicable Contributors*, that the same will prove, and be an add. security to them, and tend much to the perpetuating of their amity and success, concord and prosperity.

This entirely confirms the view we have already expressed regarding a working understanding between the two offices. (See 1735.)

1716.—In June this year the *Union* pub. a small broadside, in which, after the manner of the time, it deals very frankly with one of its competitors :

> This office is for the mutual and equal advantage of all that enter into it, the directors themselves being barr'd from the least profit but in common with every other person insuring ; whereas in the *Sun* Office, the few proprietors take to themselves ten shillings p.a. p. pol., let the sum insured be more or less, and return none except in case of loss, and even then are oblig'd to repay but 4*s.* out of the ten (out of which they also deduct 3 p.c.), let any loss ever so much exceed it : whilst their mixt and very remote insurances, both of houses and goods, necessarily expose them to the greatest hazards.
>
> And as the *Union* Office hath been erected purely for a common good, so it hath been answerably approv'd of by the publick ; insomuch that though it be of little more than one year's standing, such considerable numbers have insur'd, and such has been the good management thereof, that the porters' clothes and badges, who are employ'd in the removal of goods at fires, and all losses and incident charges, have been borne out of the premiums and interest of the deposit-mony, and an overplus of profits made : so that even in its infancy it is capable of answering any loss which may probably

> happen; and if Providence preserves from extraordinary fires, not only of returning each insurer's deposit-mony, but a dividend of profits therewith.

1717.—During this year there was founded the *Westminster* Fire Office, on the model, it was stated, of the *Hand-in-Hand.* The following circumstances regarding the formation of this So. were made public by adv. in the *Courant* of 12th October of this year :

The "*Westminster* Ins. from Loss by Fire," at their office at Tom's Coffee House, in St. Martin's Lane, near Charing Cross, set on foot and carried on by some hundreds of the principal inhabitants of the Liberty of Westminster, where all persons may insure their houses and other brick and timber buildings which are situated within the Bills of Mort. and parts adjacent, by depositing in the common stock 12*s.* for every £100 insured 7 years on brick buildings, and double for timber; at the end of the insured term 10*s.* of the said 12*s.*, and the like proportion for timber buildings, to be returned to the person that paid in the same, or to his assigns, the other 2*s.* being applied to defray office rent, books, salaries, and other contingent charges necessary in carrying on the bus. of the So. In this office all persons concerned are equal sharers in the profits arising from the int. of the stock or otherways, of which a yearly dividend will be made; that will be another add. advantage to every person that insures in this So."

The Deed of Sett. of the So. was dated 13th February, 1717, and it was inrolled in the Court of Chancery 2 days afterwards.

The So. got speedily to work, and appears to have been a success from the very commencement. (See 1720.)

In the *Courant* of the 8th July, this year, appeared the following adv. :

> I, Jos. Woodward, do hereby certify that I have received of the undertakers of the *Friendly* So., by Temple Bar, the full sum insured on my house burnt down in Lyme House. And I, C. C. Votear, do also certify that I have received of the said undertakers the full sum insured on my two houses burnt down at the same place, long before the same was due. *Note.*—Houses are insured at the said office in Palsgrave Court, as for many years past, although (through the mistake of some who took this office for the *Phœnix*) it hath been reported to the contrary.

1720.—We now enter upon what may be justly termed the "Speculative Period" of Fire Ins. hist. It is just the close of what we usually designate the South Sea Mania. For several preceding years numerous projects relating to Annuities, and to Life and Marine Ins. respectively, had been set on foot; and ingenuity having been exhausted in these directions, Fire Ins. came in turn for the bold enterprise of promoters.

Taking the projects as far as possible chronologically, there appeared in the *Daily Courant,* 13th February, the following :

At Sam's Coffee House behind the Royal Exchange, on Monday the 15th inst., a Subs. will be opened for *One Million* of Pounds Sterling, as a Fund for Ins. Houses and Goods from Loss by Fire. As an Ins. of this nature by a Co. with a sufficient fund will be of great use and benefit to the publick, so it will appear by the proposals to be more advantageous to the subs. than any that has yet been offered to the world.

The subs. was taken, and the scheme became known as *Overall's Ins. Co.* The preamble to the subscription contract was as follows :

> That the subs. agree to pay into the hands of Mr. Wm. Smith, Linen Draper, 3*s.* p.c. on the said million, under such regulations as shall hereafter be agreed upon by such directors as shall be chosen at a gen. meeting; which shall be within 30 days after the subs. is completed and approved of by them at a subsequent gen. meeting.
>
> And do further agree, That 6*d.* p.c., part of the above-mentioned 3*s.* p.c., shall be paid by Mr. Wm. Smith to Mr. Edmund Overall for his expense and trouble in procuring this subs.; and that they will answer all such further calls upon them as shall be made by the consent of the first general meeting within such a time as they shall order, or forfeit their money now paid in and all further interest which they might have by this undertaking, provided notice of such gen. meeting be given in some publick paper, and three days at least be appointed for the payment thereof.

Then again, on the 17th, the following adv.:

> The subscription for ins. houses and goods from fire being completed, this is to give notice that receipts signed by Mr. Wm. Smith for the money paid in part of the said subs. will be delivered by Mr. Edmund Overall at Sam's Coffee House behind the Royal Exchange, from this day until Saturday next, from 10 in the morning until 5 in the afternoon.

In the *Daily Courant* of 18 Feb. the following :

> All the subscribers to Mr. Overall's Subs., which was taken at Sam's Coffee House on Monday the 15th inst., are desired to meet this morning at 10 o'clock in order to take such resolutions as shall be needful immediately to secure their fellow-subjects from the great loss they may sustain by the unavoidable accident of fire.
>
> N.B.—It is designed the said meeting shall be adjourned to Monday next, the 22nd inst., in order to confirm those resolutions; after which time they will be prepared to ins. in town and country on cheaper terms and more secure than it is possible to do in any of the present offices.

It having been reported that the projectors of this enterprise had been attempting to purchase the Charter of the Lustring Trading Co., with a view to carry on their proposed business under its powers, the Parl. Committee, which sat shortly after this Subs. was taken, made some inquiry upon the subject. [For details as to the orig. of this Parl. Committee, see ANNUITIES ON LIVES, at this date.]

Mr. Overall, being examined before the Committee, said that what hath been transacted with the Lustring Co. is that they have agreed to enlarge their capital, and thereby let in several persons into their Co.

Colonel Peter Racuise, Governor of the Lustring Co., produced their Charter to the

Committee, and said that the Co. had no dealings with Mr. Overall; but that Mr. Loome, concerned in the Subs. taken at Sadlers Hall, *had been up and down with them about buying the Lustring Charter; but that it was not sold.* They have enlarged their cap. in order for the more effectual carrying on the Lustring Trade; not to carry on an ins.

Having thus eluded the vigilance of the Parl. Committee, the course was now clear, and accordingly in the *Courant* of 5th March appeared the following adv.:

> Whereas Mr. Wm. Smith of Aldgate hath proposed to the *Union* Fire Office for insuring goods and merchandizes from loss by fire, a subs made for a joint stock of £1,500,000, under the title of the *United Co. of Insurers*, which will consist of above 3000 persons, who will be all useful to obtain a very great advantage to the publick, as well as to themselves in particular: And whereas for the present it may be proper to act under a common seal: *This is to give notice, that if any persons who are possessed of any such charter will make him proposals at his house in Aldgate, they may find it to their advantage*, the said Mr. Smith having already in his hands several thousand pounds paid him by the aforesaid subscribers to be employed for their advantage.

What ultimately became of the enterprise does not appear. Its promoters made a successful venture in South Sea Stock. They purchased at £600, and sold out at £800 p.c. This prob. lured them on and ruined them in the crash which soon followed.

We now reach another project—the *Sword-Blade* Fire Office. In the *Postman* of 16th Feb. there appeared the following:

Whereas a Subs. book was proposed to be laid open as yesterday at Sam's Coffee House behind the Royal Exchange, for raising the sum of £1,000,000 stg. for ins. houses, household goods, utensils and goods in trade from loss by fire in any part of England; and several gentlemen, merchants, *and others, appearing at the time appointed, were refused subs. into the same.* Now, to prevent such clandestine methods being used, it was agreed at a meeting of several eminent merchants last night, that a book should be laid open this day for the aforesaid purpose at the Union Coffee House in Cornhill, at 11 o'clock in the forenoon

In the *Daily Courant*, 22nd February, 1720, there appeared the following:

A gen. meeting of the proprietors of the *Sword-Blade Fire Office*, which was taken in at the Union Coffee House in Cornhill for raising of £1,000,000, for ins. houses, household goods, utensils, etc., will be held at the Sword-Blade Coffee House in Birchin Lane on Wednesday next at 5 in the evening, to elect managers for carrying on the said affair. N.B.—Proposals will be delivered out in a short time of the terms on which they intend to proceed.

We believe the subs. to this enterprise were afterwards returned. The peculiar and startling name of the project was no doubt derived from the trade sign of the house, and wherein the promoters held their meetings. In these days the houses in streets were not numbered: they were all distinguished by signs.

The next project was the "*British* Ins. Office from Fire."—On the 16th February there was also opened at the Three Tons in Swithin's Alley a Subs. of £2,000,000 as a fund for ins. houses and goods in any part of England from loss by fire. The subs. were to pay no money as a deposit until a goldsmith was appointed, and notice thereof given, which deposit was then to be 2*s*. 6*d*. p.c.; and that a general meeting for choosing directors should be appointed as soon as the subs. was completed. Accordingly, in the *Daily Post* of 23rd February appeared the following:

> Notice is hereby given that the receipts being deliver'd to the subscribers upon their deposits (into the hands of Messrs. Cox and Cleeve, Goldsmiths in Cornhill), upon a subs. of £2,000,000 taken on Tuesday last (16 Feb.) at the Three Ton Tavern in Sweethings Alley for a general ins. on houses, household goods, wares, and merchandizes, etc., in any part of Eng. from loss by fire. A gen. meeting of the said subscribers will be held to-morrow, etc., upon special bus. relating to the immediate execution of this undertaking. All persons concern'd are desired to attend and bring their receipts with them, otherwise they will not be admitted. N.B.—If any honest and able watermen, who can come well recommended, will apply themselves to William Wilcocks at the Marine Coffee House this day at 3 o'clock, may have their names enter'd in order to be elected firemen in the *British* Ins. Fire Office from Fire.

This is one of the schemes of which the Parl. Com. took cognizance. The following are the principal facts placed before the Committee concerning it:

Mr. Matthew Snabling said that the subs. is completed; and that between £17,000 and £18,000 is paid in; and that he don't know that there is any prem. upon it in 'Change Alley; that most of the subs. have signed the Deed of Asso. as after-mentioned; and likewise that a petition is drawn in order to be presented to His Majesty for a Charter of Incorp. That the subs. have had several meetings and agreed to enter into a Deed of Asso., which has been executed under the hands and seals of several of the subs.; which said Deed recites that the subs. have concerted measures to carry on a design of a general ins. throughout England from fire; and for raising two millions or so much thereof as shall be adjudged by persons impowered for answering all losses to the ins. by fire; and therefore associate themselves, out of whom directors and auditors are to be elected to manage the said undertaking. That they declare that all moneys to be paid by the subs. to the treasurers shall be only in trust for them, subjected to limitations, rules, etc., therein subs., viz.:

1. That all persons that are subs. shall be bound with these presents and receive and bear profit and loss in proportion to their sums subs.:

2. That the subs. shall pay £5 p.c. at 5 payments, each payment to be made at

30 days' notice in some newspaper; that there shall be two calendar months between each payment; and that the subs. making default shall forfeit 20*s.* for every £1000 stock on every default, and not have any benefit till payment:

3. That the 5 p.c. and the accruing int. is declared to be a deposit in the hands of the treasurers to answer all losses; which deposit-money shall be put out at int. on mortgages, or laid out on Government securities for the subs. use:

4. That the directors shall and may on any loss make such after-calls on the capital of £2,000,000 as shall be necessary to preserve the deposit of £100,000 from being lessened; of which after-calls 3 calendar months' notice shall be given to the subs. or their assignees. That they will ins. any sum not exceeding £10,000 on merchandize, etc., in brick or stone buildings; and a sum not exceeding £5000 in timber buildings.

With several other rules and regulations therein particularly mentioned for the better government and carrying on the said undertaking.

There is reason to believe that this was intended to be a *bonâ fide* undertaking from the beginning. Offices were taken "over against the Royal Exchange," and application was made to Parl. for leave; but was refused in July of this year. (See 12th of July.)

We next reach the *Sadler's Hall* Fire Ins. project. In the *Daily Courant* of 16th Feb. there appeared the following announcement:

A Voluntary Subs. of *Two Million* Pounds Sterling for a General Ins. of Houses and Goods from Fire throughout England will be taken this day the 16th inst. at 2 in the afternoon at the Marine Coffee House in Birchin Lane, 5*s.* p.c. to be paid at the time of subscribing into the hands of Mr. Stephen Ram, Goldsmith, Lombard St., for the sole use and benefit of the So. under the direction of the gentlemen named in the preamble.

And in the same paper of the following day this:

Whereas a Subs. of £2,000,000 Stg. for Ins. Houses and Goods throughout England from Loss or damage by Fire, was intended to be taken yesterday at the Marine Coffee House in Birchin Lane, *but by reason of the excessive crowd of people could not be there done;* the managers adjourned to the Feathers Tavern in Cheapside, *but for the same reason did not there compleate it.* The books will be again open to compleate the said subs. at Sadlers Hall in Cheapside to-morrow at 10 of the clock in the forenoon. N.B.—No persons will be admitted to subscribe but such as have letters from the managers, and shall there pay 5*s.* p.c. into the hands of Mr. Stephen Ram.

The subs. contract was as follows:

> The subs. agree to pay into the hands of Mr. Stephen Ram, Goldsmith, in Lombard Street, at the time of their respective subs., 5*s.* p.c. in part thereof for the sole use and benefit of the intended Co.
>
> That as soon as conveniently may be, public notice shall be given to the subs. to meet and elect such and so many directors and managers as the majority present shall determine, at whose disposal the 5*s.* p.c. now paid and under whose direction the affairs of the intended Co. or Joint-Stock shall then be or remain.
>
> It is also agreed that if any subs. shall refuse or neglect after public notice given to pay in such further part of the subs. as shall be ordered by the directors or managers, chosen as aforesaid, and impowered thereto by the General Court, such subscriber shall forfeit and lose for the benefit of the So. the 5*s.* p.c. paid on subs., and be no longer deemed a member of this So.

The Parl. Committee took the following evidence concerning this project:

Mr. Loome, a manager of the said undertaking, being examined, said, that £4095 is paid in of the aforesaid subs.; and as yet they have no meeting of the subs.: that what is bought or sold of the said subs. is about 15*s.* p.c. advance. That the persons wanting to subs. crowding very much, part of the subs. was taken at the Feathers; and that he has not made one farthing advantage by any letters for admitting persons to subs. That one person subs. £400 or £500 in Mr. Overall's Subs., and that Mr. Overall got 6*d.* p.c. by all that subs.; and that he had a scheme long before him.

Mr. Cooper, another manager, said that each subs. signed a petition to be presented to H.M. when they signed the subs. book; and that the whole £2,000,000 is not subs.; for that £300 is reserved for divers persons in England, distant from Lond.; and that no publication has been made that the subs. is full; and said that the receipts delivered to the subs. were not transferable.

Mr. Waters said that he is called a manager; that one Mr. Thomas Brown, of Fish Street Hill, told him of the Subs. of Mr. Overall's, and desired him to subs. and be concerned in it; but that they thought themselves injured by Mr. Overall: *and thereupon* set up another Subs., not thinking his good enough.

So far the evidence was in favour of the project. The Committee desired to hear what could be said against the undertaking, and the following evidence was adduced:

Mr. Walker said that letters were given out for prems. for persons to be let into the aforesaid subs.; and that £20,000 has been got by this stock, the managers thereof filling the subs. with letters of their own. That Mr. Overall's Ins. was first intended to be set up; and that the purport of the said letters were that if they could not come into Overall's Subs., they should be admitted into theirs. *That the methods of proceeding by the said managers were such that the 2s. 6d. p.c. paid in, in two or three days' time sold for 40s.;* and those persons that the managers intended should subs. had letters sent them, paying a prem. for them. That when they found all the City run into a method of stock-jobbing, he did subscribe in some of them, and has been invited three several times to be a manager, which he refused; ***and that no trade has been minded since the several Subs. have been set on foot!***

Mr. Overall said that he had been concerned in the Fire offices 4 or 5 years; and that he pub. proposals for a subs. for ins. houses, which was set on foot the 15th inst.; and that Mr. Loome ingrafted upon his projection; and that the agents of the *Ins. at Sadlers Hall* took 20 and 30 guineas from gentlemen to give them a power to subs. That the Lustring Co.'s Charter is in the hands of Colonel Peter Recuise, Governor of that Co.; and that he has not contracted for that Charter: but that the present proprietors have come to a resolution to enlarge their capital. He said (on a later occasion before the Committee) that he had made several inquiries about letters that were sold for prems., and had found several persons who had sold those letters: and that it was transacted in 'Change Alley by Mr. Mertin, Mr. Edwards, Mr. Rogers, Mr. Samuel Butler, and Mr. Blackwell.

Upon the foundation of this enterprise there was estab. later in the same year the ROYAL EXCHANGE FIRE CORP.

Sir F. M. Eden, in his valuable pamph. on *Ins. Charters*, says that it was upon the foundation of this project that the *Lond. Assu. Corp.* was founded. That this is clearly an error may, we think, be shown from the following statement made on the authority of that well-known publication—the *Political State*:

> On the 11th Nov. 1720, a meeting of the subscribers was held at Sadlers Hall, when the managers informed them that they had agreed with the *Royal Exchange* Corp. that the proprietors of every £1000 receipt should have two shares in the cap. of that Co.; to which purpose the said Co. would open books the next day. Those who did not approve the arrangement were to receive their money back.
>
> On the original subs. £5 p.c. had been paid, most of which had been laid out in South Sea Stock at a very high price.

Next in turn comes the project known as the *Rose* Fire Office. In the *Daily Courant* of 16th Feb. 1720, there also appeared an adv. as follows:

> At the Marine Coffee House in Birchin Lane to-morrow, being the 17th inst., at 9 in the forenoon, books will be opened for taking subs. for raising *one million* of pounds stg. for insuring houses and goods from loss by fire in any part of Eng.; it being more beneficial than any office now in being.

In the *Daily Courant*, 19th Feb., the following:

> The *Rose* Fire Office Subs. for £1,000,000, which was on the 17th of this inst. February completed, at the Marine Coffee House in Birchin Lane, the receipts for the subs. will begin to be delivered out to-morrow the 20th inst. at ten in the forenoon, at the place abovesaid.

In the *Daily Post*, 22nd Feb., it was announced:

A great number of gentlemen and others having made application to be insured in this most beneficial office, it is thought convenient that it be immediately put on foot to issue out pol., and therefore it is propos'd that a gen. meeting of the subs., who have compleated the subs. of £1,000,000 for carrying on the said ins., be held on, etc., etc., to chuse gentlemen to manage the affair of this office, and to issue out pol. *N.B.*—On Monday next, Books will be left at the Marine Coffee House, and at John's, in White Lion Alley in Birchin Lane, and at the Crown in George Yard, Lombard St.; in each of which will be all the subs. names to be view'd, in order for every member to have a free vote.

The Co. actually commenced business in April. Its fate we do not know.

We now reach what, from the want of a more distinctive title, we must designate the *General* Fire Ins. project. In the *Daily Courant* of 20th Feb. we find the following:

Whereas yesterday a Book was opened at the Swan and Rummer in Finch Lane, for the taking a subs. of £2,000,000 stg. for a *General Ins. of Houses and Goods throughout Gt. Britain*; but whereas the managers have thought fit to take only subs. for £1,000,000, which sum is compleated, and the books shut. This is to give notice that the 2*s.* p.c. is actually paid into the hands of the Directors of the Bank, the 6*d.* p.c. being deducted according to the preamble of the said subs., and receipts will begin to be delivered out at the Swan and Rummer on Monday the 22nd inst., at 3 in the afternoon. The subs. are also desired to meet on Tuesday at the aforesaid place at 5 o'clock in order to chuse Directors, and proceed to a final estab.

A Correspondent (Anti-Humbug) to *Mist's Weekly Journal*, 20th Feb.—writing, we suspect, in the interest of this project—said:

> Mr. Mist,—I send you this for no other object but to expose a late piece of villainy. On Sunday last I had a proposal put into my hands for a subs. to be taken in at Sam's Coffee House behind the Royal Exchange, for a *General Ins. from Fire*. The scheme appeared to me to be so reasonable, and the design so useful, that I immediately resolved to subscribe; but on Monday, when the subs. was taken in, the crowd was so great that I could not get in. *Upon the success of this subs. the Bublers set on foot two or three more the very next day.* But though I could not get into the first, I had more honour than to subscribe to any other; for I think it is a greater piece of villainy to defeat a man of the benefit of his project than to pick his pocket, or take away a small sum upon the road. In short, Mr. Mist, your bublers are a set of fellows that would as soon pick your pocket or take your purse, as rob you of a project, provided it could be done with the same safety, etc., etc.

For the fate of this project see proceedings before the Lords Justices at Whitehall, 12th July—subsequently given.

We do not trace the several other Subs. just referred to—at least not in connexion with Fire Ins. Numerous other Ins. projects were in hand at this date. For some reason, not easily discoverable, there was a sudden lull among the Fire Ins. promoters for the next 2 months. And in truth the excitement had reached such a pitch that men required time to rest and look about them. The Easter holidays intervened.

Next in order comes the *Globe* Fire Office. In the *Daily Post* of 23rd April it was announced:

A Subs. for *Two Millions* will be taken for Ins. Houses, Household Goods, Wares, and Merchandize from Loss by Fire all over England, by the GLOBE FIRE OFFICE, at the Ship and Castle Tavern, Cornhill, this morning from 8 to 12, and from 2 to 6 in the afternoon.

We suspect this Subs. was not taken up. Whether it re-appeared in the form next to be noticed—or whether the succeeding project was entirely distinct—we have no means of knowing.

The following scheme of *Fire Ins. combined with Building Operations*, was adv. in the *Daily Courant*, 9th June, and embodied the orig. idea of "permits" for subs.

> Several gentlemen, considering the ruinous condition of the greatest part of the buildings within the Bills of Mort., and of most of the towns in England, and being sensible of the many disadvantages constantly attending private contracts, have resolved to enter into a Co-partnership of £3,000,000 for building or re-building houses, or any other edifices on new or old foundations, in any part of Eng., upon such easy terms as will be exceeding beneficial to the publick in general, as well as very advantageous to the proprietors. *They design also to Insure Houses and Goods in any part of the Kingdom from Loss or Damage by Fire*, at an easier rate, and upon a more sure foot than any yet advanced. *And to prevent mean people from being concerned in this beneficial undertaking, every person that is admitted must pay 1s. p.c. or 10s. per share for "permits" of £1000 each, which will be deliver'd out this morning at 9 o'clock, at the Globe Tavern in Stocks Market.* No person to be allowed more than ten shares for himself, nor less than one. And as soon as the permits are deliver'd out, notice shall be given in this paper for the persons concerned to pay 5 p.c. (in order to proceed immediately upon bus.) into the hands of an eminent banker, who will give his accountable receipt for the same, to be returned upon demand, if any person should be dissatisfied.

With this scheme of "Globe Permits" the mania of speculation may be said to have reached its crowning height. The force of folly could no further go. The originality of projectors o'erleaped itself, and fell.

The scene changes:—Their Excellencies the Lords Justices being in council at Whitehall, on the 12th July, 1720, took into consideration the many inconveniences arising to the public from several projects set on foot for raising of Joint Stocks for various purposes, and that a great many of H.M.'s subjects have been drawn in to part with their money on pretence of assurances that their petitions for patents and charters to enable them to carry on the same would be granted; to prevent such impositions, their Excellencies that day ordered the said several petitions, together with such reports from the Board of Trade, and from His Majesty's Attorney and Sollicitor-General, as had been obtained thereon, to be laid before them, and after mature consideration thereof, were pleased by advice of His Majesty's Privy Council to order that the said petitions be dismissed. There were only two relating to Fire Ins. projects, viz.:

1. Petitions of several Citizens, Merchants, and Traders in Lond., and other subscribers to a *British* Stock for a General Ins. from Fire in any part of England, praying to be incorp. for carrying on the said undertaking.
2. Petition of several of His Majesty's loyal subjects of the City of Lond. and other parts of Gt. Britain thereto subscribing, praying to be incorporated for carrying on a *General* Ins. from Losses by Fire within the Kingdom of England.

On the same memorable day the warrants for granting corp. powers to the two great Corp. which originated this year—The *Royal Exchange* and *London Assu.* Corps., of which we have soon to speak—passed the Great Seal. [MARINE INS., HIST. OF.]

The speculative mania, thus stayed in England, had to a certain limited degree extended itself to *Scotland* and to *Ireland*; and led to the estab. of a Fire Ins. Office in each of these countries.

Speaking first of the *Friendly Ins. So. of Edin.* It appears there had been several disastrous fires in that city just previously to this date, by which many individuals sustained great loss, and hence the formation of the office. Fire Ins., it is stated, had been unknown in Scotland until just prior to that date. The scheme of the So. was that of perpetual ins. We shall give more complete details in our history of the asso. in its alphabetical place.

Of the scheme of an office in Dublin, which we believe took the name of the *British and Irish*, we have no details. It was designated in its early days as a General Ins. for Fire in Ireland. The Earl of Ferrers was its governor; Mr. Cunningham, sub-governor; and Mr. Morris as deputy-governor. The Co. proposed to keep its general office in Dublin, and another in Lond. We fancy the scheme was floated in Lond. It was to have a Royal Charter. We gather these meagre details from the *Weekly Journal*, 13th Aug. 1720.

During this same South Sea Mania, a pack of playing cards was pub. in illustration of the prevailing folly. Each card contained a caricature of one of the numerous bubbles of the day, with a pertinent (or impertinent!) verse underneath. Although possessing little merit, they are curious in their way as a record of the times. Thus speaks the *Seven of Clubs* on Fire Ins.:

Projecting sure must be a gainful trade,
Since all the elements are bubbles made;
They're right that gull us with the dread of fire:
For fear makes greater fools than fond desire.

The other cards in the pack were all of the same strain; and those on Life and on Marine Ins. will be quoted under those heads.

Looking back a little to the previously existing Fire Offices, we find the following incidents occurred during the year.

In the *Daily Courant* of 22nd Jan. 1720, there appeared this announcement:

> The Directors of the *Westminster* Fire Office at Tom's Coffee House in St. Martin's Lane, near Charing Cross, do give notice, That all persons who have estates in houses, chambers, etc., within the Bills of Mort., or at Greenwich, Richmond, and Twickenham, and all other towns and villages between Greenwich and Richmond, *provided they are within two miles of the Thames*, may effectually secure the same from the calamity of fire by depositing 12*s.* at int. in the common stock for every £100 ins. on brick, and double for timber, for the term of seven years; and at the end of the term ins. 10*s.* of the 12*s.* will be returned to the person who paid the same, or to his assigns, together with the seven dividends of profit arising by int. of the stock, etc., which in the first two years have amounted to 1*s.* 7½*d.* p.c. on brick and 3*s.* 3*d.* p.c. on timber; *and this is more than any other fire office has divided to their members in double that time; which sufficiently demonstrates the great success that has attended the Westminster contributors.*

In June, 1720, appeared in several of the Lond. newspapers the following remarkable adv.:

> A member of the *Sun* Fire Office, for good reasons, gives notice of a new office of ins. for goods and houses in all parts of Gt. Brit. by the name of the *Hand-and-Sun* Fire Office; upon much easier terms, and upon a solid foundation. That a hundred persons will be sharers with him in the said ins., which will be set on foot with the utmost speed, and wherein all persons concerned will have a just accompt of profit and loss. N.B.—A salt work will in a short time be built at or near the mouth of the river, to supply the fishery, and furnish the town with the finest of bay salt.

To which the *Sun* Fire replied as follows:

> Whereas a scandalous adv. was inserted in the *St. James's Evening Post* of Thursday last, and in the *St. James's Post* of yesterday, in the name of a member of this office, pretending to set up an office of ins. after a new method. The Co. thinks fit to inform the publick that they are utter strangers to the projector, and abominate such vile practices; the design of which (without doubt) is only to impose upon, and bubble, the credulous part of mankind out of their money.
>
> N.B.—Whatever projection this may be, it is very certain that it can't exist, because it is directly within the clause of the new Act of Parl. against the bubbles.

We had suspected Povey in regard to the first adv.—the office had this year discontinued issuing his paper, the *British Mercury*. But the statement that the Co. were "utter strangers to the projector" appears to refute such a supposition.

In the *London Journal* of 16th July appeared an advertisement, which, if repeated in the present day, would be regarded with some curiosity. It is signed by 43 individuals whose property had been destroyed by fire in various parts of Lond.; and states that in justice to the said office they hereby certify that they have received the full amount of their claims for the losses and damages they thereby sustained.

This adv. is dated from the *Sun Fire* Office, 9th July, 1720, and goes on to inform the public that constant attendance is given at the office in Threadneedle Street, behind the Royal Exchange, for insuring houses, goods, and merchandize from loss by fire in any part of the Kingdom, at the easy rate of 2*s.* 6*d.* p. quarter, with a book entitled the *Historic Register*, and 2*s.* a quarter without it; not exceeding £500 for each pol., the subs. being liable for no further contributions. In previous announcements they had referred to a paper called the *British Mercury*, which they appear to have changed for the new publication.

1721.—Two formidable rivals entered into the ranks of F. Ins. in a somewhat unexpected manner this year, viz.: "The *Royal Exchange* Co., for the insuring of Houses and Goods from loss or damage by Fire," etc., and "The Corp. of the *London Assu.* of Houses and Goods from Fire." In the preceding year, two powerful corp. bearing similar names had received Royal Charters enabling them to carry on the bus. of Marine Ins., with a monopoly as against other corp. for a period of years, in consideration of large sums of money to be paid to the use of H.M. The financial calamities of the latter half of that year had prevented the Corp. from carrying out their respective agreements, and their charters stood to be forfeited. A happy thought suggested the adding of Fire and Life Ins. branches to the former bus. A separate stock was raised for these purposes. In the case of the *Royal Exchange* Fire, the Sadlers' Hall Subs. was made available. Financial arrangements were made with the Gov., and things proceeded satisfactorily. The details will be given in our histories of these respective Corp.

The *London Assu.* first completed its legal formalities, and issued, after the manner of the period, "Proposals" setting forth the bus. it would undertake, and the mode of conducting the same. In these it said: "Whereas the insuring from loss or damage by fire tends to the preservation of many families from that poverty and ruin which such a calamity might otherwise expose them to. Therefore His Most Gracious Majesty, being desirous of promoting and encouraging such lawful and commendable undertakings, as are for the benefit and security of all his loving subjects, hath granted to this Corp. his Royal Charter, by virtue of which they assure houses and buildings, household furniture, goods, wares, and merchandize, being the property of the insured, or on commission; *except* glass and china-ware, and all manner of writings, books of account, notes, bills, bonds, tallies, ready money, jewels, plate, pictures, gunpowder, hay, straw, and corn unthrashed, from loss or damage by fire," upon the terms and conditions of which the following is the substance:

> Art. I.—*Non-hazardous* risks will be assured at rates in Table No. 1.
>
> II.—For the accommodation of such persons as are desirous of being assured for a term of years,

this Corp. will assure (on such buildings or goods as aforesaid) any sum not exceeding £1000 at the rate of 12s. p.c. for 7 years; and as far as £2000 at the rate of 14s. p.c. for the like term of 7 years, without subjecting the assured to any calls or contributions to make good losses.

III.—Buildings and goods are declared to be distinct ventures—so that if both are insured, the higher rate for larger amount would not apply.

IV.—Timber buildings containing goods not hazardous, and goods or merchandize (not hazardous) in the same, are assured at rates in Table II.

V.—*Hazardous trades* in brick buildings come under Table II.

VI.—*Hazardous trades and goods in hazardous buildings* assured, come under Table III.

VII.—Chemists, distillers, sugar-bakers, maltsters, houses and goods on *London Bridge*, or any other assurances more than ordinarily hazardous by reason of the trade, nature of the goods, *narrowness of the place*, or other dangerous circumstances, may be made by special agreement.

VIII.—Where two risks are included in one pol., as two houses, or house and outbuildings, or house and goods, *the sum assured on each must be distinguished.*

IX.—To prevent frauds, if any buildings or goods assured with this Corp. are or shall be assured with any other Co. or So., the pol. granted by this Corp. is to be null and void, unless such other assu. is allowed by endorsement on the pol.

X.—No pol. is to be in force till the prem. for one year is paid. Renewal receipts to be stamped with seal of Corp.

XI.—Pol. not to extend to hazardous buildings or goods unless same mentioned in pol.

XII.—No loss or damage by fire happening by any invasion, foreign enemy, or any military or usurped power whatsoever, to be made good.

XIII.—All persons assd. by this Corp. are, upon any loss or damage by fire, forthwith to give notice thereof, by a letter or otherwise, to the directors or sec. at their house in Lond.: and within 15 days after such fire, deliver in as particular an account of their loss or damage, as the nature of the case will admit of, and make proof of the same by the oath or affirmation of themselves, their domesticks or servants, or by their books of accompts, or other proper vouchers, as shall be required; and also to procure a certificate under the hands of the minister and churchwardens, together with some other reputable inhabitants of the parish, not concerned in such loss; importing that they are well acquainted with the character and circumstances of the sufferer or sufferers, and do know or verily believe that he, she, or they have really, and by misfortune, sustained by such fire the loss and damage therein mentioned. And in case any difference shall arise between the Corp. and the assu. touching any loss or damage, such difference shall be submitted to the judgment and determination of arbitrators indifferently chosen, whose award in writing shall be conclusive and binding to all parties. And when any loss or damage is settled and adjusted, the sufferer or sufferers are to receive immediate satisfaction for the same.

XIV.—In adjusting losses on houses, no wainscot, sculpture or carved work, is to be valued at more than 3s. p. yard.

N.B.—*There is no average clause in the pol. of this Corp.; but the assured, in case of loss, receive the full damage sustained, deducting only 3 p.c. according to the terms of the pol.* Persons assured by this Corp. do not depend upon an uncertain fund or contribution, nor are they subject to any covenants or calls to make good losses which may happen to themselves or others; the cap. stock of this Corp. being an unquestionable security to the assured in case of loss or damage by fire. And in case of such loss or damage the assured have as easy methods of recovery as can be had against any person or so. whatever.

For the timely assistance of such as are assured by this Corp., they have provided several engines and watermen, with proper instruments to extinguish fires, and porters for removing goods, all cloathed in green, and having every one a badge, with the same figure as on the top of the proposals, viz. a Britannia holding a harp, and supported by the Lond. Arms, to distinguish them from servants belonging to other offices; and the badges are all numbered, of which all persons are desired to take notice who entrust them with goods, or have any complaint to make. The same figure as on the badges will be affixed on buildings, etc., assured by this Corp.

T. of Ann. Prems. to be paid for Fire Assu.

Sums Assured.			No. I. Common Assurances.		No. II. Hazardous Assurances.		No. III. Doubly Hazs. Assurances.	
Any Sum not exceeding £200.			at 4/- per Annum.		at 6/- per Annum.		at 10/- per Annum.	
Any sum above	£200	Not exceeding £1000	at 2/-	per Cent. per Annum. In Brick Houses.	at 3/-	per Cent. per Annum.	at 5/-	per Cent. per Annum.
	£1000	£3000	at 2/6		at 4/-		at 7/6	
	£3000	£4000	at 3/-		at 5/-			
	£4000	£5000	at 4/-					
	£5000	£10000	at 5/-					

N.B.—Any larger sums, and some of the goods excepted in the preamble, may be assured by special agreement.

1722.—The *Royal Exchange* did not get its Fire Ins. department into operation until this year. Having secured its Parl. powers, and obtained special authority to commence bus., there was issued the following Prosp. and statement of conditions:

Whereas the assu. of houses, buildings, goods, wares and merchandizes from loss and damage by fire is of publick benefit and advantage, and tends to the preservation of many families from that poverty and ruin which such a calamity might otherwise expose them to. *And as the offices which have hitherto been set up might evidently be improved and the bus. of assu. carried on with greater safety to the assured, and in a more extensive and beneficial manner, by Corp. estab. by authority, and impowered to raise such a stock or fund as may be a sufficient security against any loss or damage that may happen by fire.*

Therefore His Most Gracious Majesty, being desirous to promote and encourage such lawful and commendable undertakings as are calculated for the security of all his loving subjects, hath granted to this Corp. his Royal Charter for those ends and purposes, by virtue whereof they now assure houses, buildings, goods, wares and merchandizes, from loss and damage by fire, *throughout the Kingdom of Eng., Dominion of Wales, and Town of Berwick-upon-Tweed, the Kingdom of Ireland, and all other parts of H.M.'s dominions beyond the seas*, upon the following easy terms:

Imprimis.—This Corp. will assure any college, hall, house or other building, and all goods or wares and merchandize (*except* notes, bills, tallies, books of accompts, ready money, china and glass wares, jewels, plate, pictures, writings, corn unthrashed, hay and straw, *not in trade*), *to their full value*, after the rate of 5s. p.a. for every sum not exceeding £250 on brick or stone buildings, or goods and merchandize therein; and 8*s.* p.a. for every sum not exceeding £250 on timber, plaister or thatched buildings, or goods and merchandize therein, and so on in proportion for any larger sum. *Provided the sum assured does not exceed £1500 on any one house or building, and goods and merchandize therein.* But if such assurance as aforesaid shall exceed the sum of £1500, then the assured are to pay 7*s.* 6*d.* p.a. for every £250 (on the whole sum assured) on brick or stone buildings, and on goods and merchandize therein; and 12*s.* p.a. for every £250 (on the whole sum assured) on timber, plaister or thatched buildings, or goods and merchandize therein.

Secondly.—As assurances to rectifiers of spirits, chymists, powder-men, ship-chandlers, sugar and bread bakers, oil-men and colour-men, are more hazardous than others, such persons are to pay 7*s.* 6*d.* for every £250 on brick or stone buildings, or goods and merchandize therein, and 12*s.* p.a. for every £250 on or in timber, plaister or thatch'd buildings; but if more than £1500 be assured on any house or building in the occupation of any of the aforesaid traders, then the assured are to pay 11*s.* 3*d.* p.a. for every £250 (on the whole sum assured) on brick or stone buildings, or goods and merchandize therein; and 18*s.* p.a. for every £250 (on the whole sum assured) on timber, plaister or thatch'd buildings, and goods and merchandize therein. And as glass and china ware in trade and apothecaries goods are equally hazardous, they are to pay the same; and if any assu. be desired for less than £250, such assu. is to pay the same prem. as for £250.

Thirdly.—All persons upon their application to be assur'd are to pay 7*s.* 6*d.*, which is to go towards the charge of assu. if it is agreed to; but in case the directors do not approve of, and agree to such assurance, then the money is to be returned without any deduction.

Fourthly.—No assurance is to take place till the prem. for one year is paid; and at the end of 12 months after the date of the pol. or within 14 days after the prem. to be paid for the next year, and so from year to year, till the pol. expires; or the assured may pay down the money for any number of years they think fit.

Fifthly.—The term of assu. is not to be less than one year, nor more than 7; but if any person assured remove their goods or habitations before the expiration of their pol., such removal shall be indors'd on the back of their pol. *gratis*, provided they apply for the same within 14 days after such removal.

Sixthly.—For the security of all persons assured by this Corp., their cap. stock or fund is by their charter subjected and made liable, and shall always be ready to pay and make good to the assured the amount of all losses by fire, provided they are not at the time of such loss assured in any other corp. or so., in which case all pol. are to be void, unless such assu. be allowed of and specified upon the back of the pol.

Seventhly.—All persons assured by this Corp. are, upon any loss or damage sustained by fire, forthwith to give notice thereof by letter or otherwise to the directors or sec. at their public office, *in order for a view thereof*, and such assured, upon making out their loss by the oath or solemn affirmation of themselves, their domesticks or servants, or by their books or other proper vouchers, and the certificates of the minister, churchwardens, constable, or other reputable inhabitants of the parish not concerned in such loss, or by such other methods as may be reasonable, shall either be paid in money, or the houses, buildings, and goods lost or damaged by fire shall be rebuilt, repair'd, or replac'd, and put into as good a condition as they were in when the fire happen'd, at the option of the Corp., and in case any difference arise between this Corp. and any assured, about the proof of a loss, such difference shall be submitted and refer'd to the judgment and determination of arbitrators indifferently chosen, whose award in writing shall be conclusive and binding to all parties.

Eighthly.—All persons assured in the country are to pay for the carriage of their respective pol. and marks, and when they pay their ann. prems. to the persons authoriz'd to receive the same, they are to take a receipt for the same upon the back of their pol.

Ninthly.—For the timely assistance of such as are assured by this Corp., they have provided several engines and a sufficient number of firemen to work the engines, and watermen all clothed in yellow, with proper instruments to extinguish fires, and a sufficient number of porters with bags, etc., for removing goods, having every one a badge, with the same figure as on the top of these proposals, to distinguish them from servants belonging to other offices; and for the fidelity of the said firemen and porters, the Corp. has taken sufficient security, so that the assured, in case of danger, may safely intrust any waterman wearing such badges into their houses, and the porters with their goods. And the same figure as on the badges will be affixed on buildings, etc., assured by this Corp.

N.B.—*Assurances are not only made by this Corp. upon easier terms and better security than in former offices, but the full value of their houses and goods may be assured: and all merchants and others having goods on commission may assure the same for the benefit of the proprietors.* And heads of colleges, halls, companies, and all persons in trust, may assure buildings, goods, etc., which could not be done by any of the offices heretofore subsisting. And whereas persons assured by other sos. not incorp. are subject to calls in case of a loss, or a deduction out of the money due to the sufferer, those that are assured by this Corp. are not liable to any calls or deductions whatsoever.

☞ The firemen and porters badges are all numbered, which all persons that intrust with them goods, or have any complaint to make, are desired to take notice of.

And whereas the said Corp. have lodged *One Hundred Thousand Pounds* in the Bank of England for the security of all persons who make assurance with them.

Attendance is given at their office up stairs on the West side of the Royal Exchange, London, every day from nine in the morning till seven in the evening. Printed in the year 1722.

We have given the proposals of these two new offices thus in detail, in view of showing the progress which was being made in adapting the bus. to the wants of the community. It would seem that the *London Assu.* confined its operations in regard to F. Ins. mainly to the metropolis, while the *Royal Exchange* embraced in its scope the whole of the U.K. except *Scotland*, which seems negatively but yet unmistakably omitted. Even the Brit. *Colonies* were included in its range.

It is certain that the nature and scope of the contract of Fire Ins. was beginning to be very clearly understood. *And it is also certain that the estab. of these two powerful competitors had a marked effect upon the other Ins. Asso. of this period*, as will be seen by what speedily follows.

1724.—It is stated (in the *Historical Mag.* 1858) that there was a Fire Ins. Office existing in *Boston*, U.S., at this date, but that it was only an "agency office"; but whether this means that it was an agency for a Brit. Office does not appear. (See 1752.) [UNITED STATES, INS. IN., sub-heading *Fire.*]

1726.—On the 9th June, this year, a very important change occurred in the constitution of the *Sun* Fire Office. Instead of being a sort of mutual contribution, in which every person insuring agreed to contribute a certain premium in order to receive a certain repayment in the event of loss by fire, *if the funds permitted the same to be paid*, a regular joint stock was now created, and the stock-holders agreed to contribute the sum of £48,000 in form prescribed by the resolutions of the gen. meeting held on the above day, if and as demands upon the Co. should require the same. The cap. of the Co. was in fact divided into shares. (See 1727.)

1727.—On the 8 July, this year, the *Sun* Fire Office (for by this time the name was adopted officially) issued a new set of "Proposals," which we here give as illustrating the important advances which were now being made towards placing the contract of Fire Ins. on a sound and skilful basis:

Proposals from the Sun Fire Office, near the Royal Exchange, for insuring Houses and other Buildings, Goods, Wares, and Merchandize, from Loss and Damage by Fire.

Whereas the insuring from loss or damage by fire tends to the safety of property in general, and to the preservation of many families in particular, who otherwise might be exposed to poverty and ruin: *And whereas the extending so laudable an undertaking (that every part of the nation might have the benefit thereof) was in great measure owing to this So., they being the first that attempted the ins. of goods and that on houses beyond the limits of the Bills of Mort.:* And whereas the security of this office was at first so well concerted, as to enable ever since the most punctual discharge of all demands on the same; therefore the publick have continued a suitable encouragement thereto: But as the insurances are now very much increased and enlarged, *the security has also received so considerable an addition as to make the same unquestionable.*

Art. I.—All pol. shall be signed by three or more trustees or acting members and seal'd with the seal of the *Sun*: By which pol. may be insured houses and other buildings, household furniture, goods, wares, merchandize, and utensils and implements in trade, being the property of the persons insuring, except glass and china wares not in trade, and all manner of writings, books of accompts, bills, bonds, tallies, ready money, jewels, plate, pictures, and gunpowder; and also except all wearing apparel, hay, straw, and all manner of fodder and corn unthrash'd, unless the same be particularly valued and expressed in the pol.

II.—Houses and other buildings, goods and merchandize, etc. (except as aforesaid), in trust or on commission, may be insured, though not the property of the person insuring, provided the same are declared in the pol. to be in trust or on commission, but not otherwise.

III.—All persons on bespeaking pol. are to deposit 7*s*. 6*d*. for the stamp duty and mark; and to prevent frauds and disputes, no ins. is to take place till the pol. is in the actual possession of the insured, or his or her agent.

IV.—The rates for ins. may be seen in the following table. Under the head of *Common Insurances* are to be understood any buildings cover'd with slate, tile, or lead, and having the front, rear, and side walls of brick or stone; and wherein none of the hazardous goods or trades hereafter specify'd are deposited or carry'd on. Under that of *Hazardous Insurances* are to be understood timber and plaister buildings, and goods and merchandize therein, not hazardous, or brick or stone buildings wherein hazardous goods or trades are deposited or carry'd on. Under that of *Doubly Hazardous* are to be understood all thatch'd buildings, all timber or plaister buildings wherein hazardous goods or trades are deposited or carry'd on, and also the following trades and buildings, as sugar bakers and distillers in brick or stone buildings, any china, glass, or earthenwares, houses on London Bridge, and all mills. The hazardous trades and goods are apothecaries, chymists, bread and bisket-bakers, ship and tallow-chandlers, stable-keepers, inn-holders, and malt-houses; hemp, flax, tallow, pitch, tar, and turpentine, hay, straw, and fodder of all kinds, and corn unthrashed.

The T. of Ann. Præms. to be paid for Insurances.

Sums Insured.	*Common* Ins.	*Hazardous* Ins.	*Doubly Hazardous* Ins.
From £300 to £1000.	At 2*s*. per Cent.	At 3*s*. per Cent.	At 5*s*. per Cent.
From £1000 to £2000.	At 2*s*. 6*d*. per Cent.	At 4*s*. per Cent.	At 7*s*. 6*d*. per Cent.
From £2000 to £3000.	At 3*s*. 6*d*. per Cent.	At 5*s*. per Cent.	

If insurances are desired for any larger sums than are specify'd in the T., or any other ins. more than ordinarily hazardous, by reason of the trade, nature of the goods, narrowness of the place, or other dangerous circumstances, a special agreement is to be made for the same.

V.—Any number of houses or out-houses, or goods therein, may be insured in one pol., provided the sum insured on each is particularly mentioned, and that the whole sum does not exceed the greatest sum specify'd in the T. under the respective heads of ins., and in all ins. the præm. is to be paid for every hundred pounds.

VI.—To prevent frauds, persons insured by this office shall receive no benefit from their pol. if the same houses or goods, etc., are insured in any other office, unless such ins. be specify'd and allow'd by an indorsement on the back of the pol., in which case this office will pay their equal average on any loss or damage.

VII.—No loss or damage by fire happening by any invasion, foreign enemy, *civil commotion*, or any military or usurped power whatsoever, is to be made good.

VIII.—Persons insured removing their habitations, or their goods and merchandize insur'd, may preserve the benefit of their pol. if the nature and circumstance of such pol. is not altered; but such ins. will be of no force till such removal or alteration is allowed by indorsement on the pol.

IX.—And for preventing frauds or any imposition upon the said office, if any person or persons shall insure his, her, or their houses, goods, wares or merchandizes, etc., under any other rate or circumstance of ins. than what is agreeable to the true intent, and meaning of these proposals, such ins. shall be of no force, nor the person insuring receive any benefit by such pol. in case of any loss or damage.

X.—All persons insuring shall, upon their taking out a pol., pay the præm. to the next quarter-day, and from thence for one year more, and so long as the managers of the said office for the time being shall agree to accept the same, shall make all future payments ann. at the said office within 15 days after the day limited by their respective pol. for the payment thereof, upon forfeiture of the benefit of their pol.

XI.—Persons insured, sustaining any loss or damage by fire, are forthwith to give notice thereof at the office, and as soon as possible afterwards deliver as particular an account of their loss and damage as the nature of the case will admit of, and make proof of the same by the oath or affirmation of themselves, their domestics or servants, according to the form practis'd in the said office, or by their book of accounts, or other proper vouchers, as shall be required, and procure a certificate under the hands of the minister and churchwardens, together with some other reputable inhabitants of the parish not concern'd in such loss, importing: that they are well acquainted with the character and circumstances of the sufferer or sufferers, and do know or verily believe that he, she, or they have really and by misfortune, without any fraud or evil practice, sustained by such fire the loss and damage to the value therein mentioned. And in case any difference arise between the office and the insured touching any loss or damage, such difference shall be submitted to the judgment and determination of arbitrators indifferently chosen, whose award in writing shall be conclusive and binding to all parties. And when any loss or damage is settled and adjusted, the sufferer or sufferers are to receive immediate satisfaction for the same, deducting only the usual allowance of £3 per cent. But if there appear any fraud or perjury, such sufferers shall be excluded from all benefit by their pol.

N.B. In adjusting losses on houses, no wainscot nor any sculpture or carving work is to be valued at more than 3s. p. yard.

XII.—For a stock and fund for discharging all sufferers' losses and damages by fire, one moiety shall be reserved out of every prem. which shall be received, and over and above which every proprietor of the said office, according to his or her respective share and int. therein, are and shall be liable to make good the £48,000 agreed to be rais'd, according to the resolutions of the general meeting of the 6th of June, 1726.

N.B. For the farther encouragement of persons insuring, there are provided several fire engines, and there are also employ'd in the service of the said office (within the Bills of Mort.) thirty able body'd firemen cloth'd in blue liveries, having silver badges with the *Sun* mark upon their arms, and twenty able porters likewise wearing silver badges with the *Sun* mark, who are always ready to assist in quenching fires and removing goods, having given bonds for their fidelity. *And also all cities and great towns may receive assistance and encouragement for purchasing of engines and proper machines for putting out fires, upon application to the said office, agreeable to the number of ins. made by this office in such respective cities or great towns.*

☞ For the ease and convenience of the inhabitants of the City of Westminster and places adjacent, this So. has open'd an office in Craigg's Court, Charing Cross.

The names of the acting members are to be seen at the offices aforesaid, where daily attendance is given.

It is clear from a careful study of the foregoing that the man. of the *Sun* did not intend to be left behind in the competition which had now fairly set in.

1729.—The first reported case on a Fire Ins. pol. in the British Law Courts is that of *Lynch* v. *Dalzel* [Man. of *Sun* Fire], determined in the House of Lords this year, whereby it was held that *the person insured must own the property at the time of the loss*, or the Co. will not be liable to pay. [ASSIGNMENT OF INS. POL.]

It is believed that a Fire Ins. Asso. on the municipal plan of Compulsory Ins. was founded in *Saxony* in this year. [FIRE INS., MUNICIPAL AND STATE.]

1731. In May of this year the *Amicable Contributors* (*Hand-in-Hand*) issued a new prospectus from their office in *Angel Court* on *Snow Hill*, in which we notice one or two amendments worthy of being recorded.

The operations of the Asso. had been extended beyond the Bills of Mort. to Chelsey, Kensington, Paddington, Marybone, Pancras, Hampstead, Highgate, Stoke-Newington, and Camberwell, and other places within about 10 miles of the Cities of Lond. and Westminster. The prem. was 4s. p.c. on brick, and double on timber, for any sum from £1500 to £2000 insured within those limits, which insurances might be for any term of years not exceeding 7, and for any sum not exceeding *three-fourths* of the value of the buildings so far as £2000, *but not higher*, upon any one house, without the consent of a gen. meeting of contributors. All halls, hospitals and other large buildings, consisting of several limbs or parts divided by sufficient party-walls, might be insured in *several pol.* at the above rates.

The surplus stock of the So. invested in public securities amounted at this date at their *par* value to £51,874 3s. 6½d. Then there are the following intimations:

> At the end of every year, or oftener, the rates of contributions to fires and dividends of profits are stated by the directors; which rates are regis. in a T. affixed to the office for the information of all the members.
>
> No person insuring is obliged to pay above 10s. p.c. contribution for brick, and double for timber, in case so great a loss should happen as to require the same; which, according to the present state of the Office, can hardly be supposed ever to happen.
>
> The affairs of the Contributionship are now managed by 24 directors (who give their service *gratis*) annually chose by balloting at the gen. meeting held in Nov., 16 of them out of the directors of the preceding year, and 8 out of the members, in the way of a constant rotation.

Then there comes a little passage of combined self-laudation and frankness which is refreshing:

> The universal approbation and encouragement the Office hath met with from the public sufficiently evidenceth the happy contrivance, faithful management, and stable security thereof: it being apparently preferable by the nature of its constitution to all others of a different foundation, and to any other undertaking which may be formed after this model; *having not only overcome the hazardous state of its minority* when the prems. and int. received were insufficient to defray the necessary expenses, and whilst for several years one or two considerable fires might have utterly destroyed it; but having moreover advanced its stock to so great a height as is above mentioned, *that the very int. coming in is now more than double the constant yearly expenses*; and which being under the most frugal and disinterested management, may reasonably be esteem'd a certain security to all its members, and beyond comparison superior to what any other office can pretend to.

Finally, the surveyors and clerks are to dispatch all pol. that are to be renewed for houses within the Cities of Lond. and Westminster in 7 days; and all new ones within 10 days; and all beyond those cities within 14 days after directions given. The marks are to be put up by the messenger within 7 days after the pol. are taken out, or deliver'd with them to persons insuring at a distance.

The clerks give constant attendance at the office in Angell Court on Snow Hill from 8 in the morning to 6 in the evening.

1734.—The *Lond. Ass.* Corp. issued new proposals dated 1st June, this year, in which was embodied a somewhat enlarged classification of risks; and in which for the first time, so far as we have observed—although we suspect some of the Mut. Contribution Sos. *had* previously adopted it in settlement of losses—the *average clause* is brought to bear upon goods and merchandizes "not totally consumed." These proposals will be given in detail in our hist. of the Corp.

1735.—The *Union* Fire Office, "kept in Gutter Lane, by Cheapside, for insuring goods and merchandizes by mutual contribution, on the same easy terms with the *Hand-in-Hand* Office for houses," issued a revised scheme, dated April, this year, "the terms and methods" whereof: "To insure, for all merchants, traders, house-keepers and others in the Cities of London and Westminster, and Bills of Mort.; *and in all places within ten miles round London*," were as follows:

> To ins. merchandizes, goods, wares, utensils in trade, household furniture, and such-like things; except plate and pictures, as also glass and china-ware, all not in trade; except also ready money, jewels, books of account, tallies, writings, barns, ricks and stacks of corn, hay, and straw.
>
> To insure for 7 years or less, as desir'd. To insure answerable to the value of goods, etc., for any sum not exceeding £3000 in any one house, warehouse, yard, etc.
>
> The charges of ins. (besides pol. and mark) are—
>
> 1. For every £100 insur'd on goods inclos'd within brick or stone, 2*s*. prem. and 10*s*. deposit; and on goods not so inclosed, 3*s*. prem. and 15*s*. deposit.
>
> 2. For ins. deem'd *hazardous* as to situation, or kind of goods; each £100 inclos'd in brick or stone 4*s*. prem. and 20*s*. deposit; in timber, 6*s*. prem. and 30*s*. deposit. *Hazardous Ins.* both by situation and kind of goods, if inclos'd in brick or stone, 6*s*. prem. and 30*s*. deposit; in timber, 9*s*. prem. and 45*s*. deposit.
>
> 3. Those who insure above £1000, not exceeding £2000 in one pol., *to pay double the prem.* that others do, but the same deposit, and from £2000 to £3000 on the following terms, viz.: For every £100 insur'd on goods inclos'd in brick or stone, 6*s*. prem. and 10*s*. deposit; and on goods not so inclos'd, 9*s*. prem. and 15*s*. deposit. Ins. deem'd *hazardous* as to situation or kind of goods, each £100 inclos'd in brick or stone, 12*s*. prem. and 20*s*. deposit; in timber, 18*s*. prem. and 30*s*. deposit. *Hazardous Ins.* both by situation and kind of goods, if inclos'd in brick or stone, 18*s*. prem. and 30*s*. deposit; in timber, 27*s*. prem. and 45*s*. deposit.
>
> *All ins. beyond the Bills of Mort. pay 3s. to the surveyor for his charges, etc.*
>
> So much of the deposit-money is to be returned at the expiration of the pol. as has not been apply'd to the making good of losses, and the payment of necessary charges, together with a proportionable div. of profits. And beyond the deposit no one to be answerable for above 10*s*. p.c. on brick and proportionably for timber, to any one loss.
>
> To pay down 10*s*. earnest before surveying as part of the ins. money. There are porters and watermen, etc., provided by the office, who are furnished with bags to assist in removing of goods; who, wearing the So.'s livery and badge, and having given security for their fidelity, may be trusted in case of danger.
>
> Ins. at the time of any loss in any other office makes the pol. in this office void, unless such ins. be allowed by the directors, and endorsed by them on the back of the pol., for which 6*d*. p.c. is to be paid, and in which case an equal average, or proportionable part only of any such loss is to be paid by this So.
>
> Constant attendance is given at the office in Gutter Lane; also on Tuesdays and Fridays in the afternoon at the Amsterdam Coffee House behind the Royal Exchange; at both which places proposals and an abstract of the D. of Sett. may be had gratis.
>
> N.B.—This office hath paid more losses than any other of this nature, in proportion to the time it hath continued, and the numbers insur'd by it, by which a great many families have been preserved from ruin. 'Tis therefore not doubted but all who consult their own interest will continue to encourage this office by insuring in it, as it is calculated only for a publick good, and that upon as sure a foundation as worldly affairs will admit. And as the directors (who are chosen by the members themselves) have no advantage above any others, so those who insure with them may have all the moral assurance imaginable that the whole of their money will be faithfully applied to their sole benefit: whereas in all other offices which insure goods a part only is so applied; the manifest design of such offices being to promote the private interest of a few.

Then the following:

> And whereas 'tis objected against this office, that the members are liable to further contributions upon extraordinary losses, which they are not in any other office that insures goods; this is so far from being an objection against the *Union* Office, and a recommendation of those other offices, with such as will reason justly, and not impose upon their own understandings, that this single consideration proves the excellency of the *Union* estab., in making such provision for answering losses, as 'tis presumed cannot be exceeded by any human contrivance.

The names and addresses of the present directors, 24 in number, are given in full.

Then follows a list of the total claims paid by the Asso. from its commencement; which we give in our hist. of the office, with an "N.B.—Whereas other offices of assu. on goods do either deduct at least 3 p.c. out of each claim for defraying charges, etc., *or do oblige the sufferers to average*: it is to be noted this office is so far from doing as above, that no person insuring in this only, is put to any charge except that of an affidavit proving his loss."

A fire occurred at *Blandford*, in Dorset, this year, by which the greater part of the town was destroyed. There were very few insurances; and King's Briefs were issued. [FIRES, GREAT.] It is supposed that this event gave a great stimulus to the extension of Fire Ins in the provincial towns of the kingdom.

1739.—Maitland, in his *History of London*, pub. this year, endeavoured to form an estimate of the value of house property within the Bills of Mort.; and in doing so obtained some interesting statistics of the amounts insured on Lond. property in several of the Lond. fire offices. These we shall give under FIRES AND FIRE INS., STATISTICS OF.

1743.—This year the important case of *Sadlers* Co. v. *Badcock* [*Hand-in-Hand* Fire] was before the British Courts. Lord Chancellor Hardwicke said during the hearing that he was of opinion, from the nature of all insurances, *that the ins. must cease with the interest of the insured.* An ins. implies an interest in the thing insured. If it were otherwise, many ill consequences might follow; men might insure houses of strangers, and in hopes of getting the money insured, set their houses on fire. These pol. (he continued) are not ins. of the things themselves mentioned to be insured, for nobody can warrant against accidents; nor do such ins. attach on the thing or in any manner go with it, as incident thereto, by any conveyance or assignment of the thing insured; but the ins. are only special agreements with the persons insuring against such loss and damage as they shall sustain; and the party insuring must have a *property* at the time of the loss, or he can sustain no loss, and consequently be entitled to no satisfaction. [Fire Ins., Conditions of.] [Insurable Interest, *Fire.*]

1744.—In our account of the Amsterdam Ins. Ordin.—that of this year—we have given a form of F. pol. as then issued in that city, and expressed our opinion of its inapplicability to the purposes of F. Ins. We observe that Magens, in his famous *Essay*, 1755, says:—"The custom at *Amsterdam*, of admitting in the pol. a fixed valuation for what they ins. against fire may be of very bad consequence; and ought not to be permitted by law. Our *Lond.* pol. are better." [Valued Pol., Fire.]

1750.—The first F. Ins. Co. in *Germany*, of which we have any knowledge, was founded at Hanover this year. [Germany, sub-heading *Fire.*] (See 1779.)

1752.—The first Ins. Co. in the U.S. of which we have any authentic records [see 1724] was founded this year under the designation of *The Philadelphia Contributionship for the Ins. of Houses from Loss by Fire.* It was organized under a D. of Sett. bearing date 13 April, 1752, and was modelled upon the plan of the *Amicable Contributionship* [Hand-in-Hand] of Lond, even (says Mr. Griswold) to its name, D. of Sett., and seal or badge—four hands united—from which, like its prototype, it is frequently called the *Hand-in-Hand.* It is still in prosperous existence, "devoting its attention entirely to perpetual ins. of brick or stone houses, ground rents, etc."

One of the early directors of this Co. was Benjamin Franklin, and it would seem not unlikely that he may have been the medium of conveying the necessary details for the formation of the Asso. At the centennial meeting of the Asso., held 12th April, 1852, Mr. Horace Binney, the President of the Asso., spoke in terms of eulogy of the founders: "If they were not the first to introduce ins. against loss by fire to houses and buildings anywhere, they were the first to introduce them into this country. *After some inquiry, I am satisfied that Fire Ins. was not known among us before that year.*"—He added:

> We began a hundred years ago, with nothing but a good thought—a seed which, when it was sown, was no bigger than a grain of mustard seed, "less than all the seeds that be of the earth"; and at this day how many lodge in security under the shadow of the tree that has sprung up from it! A century ago not an inhabitant of this City possessed a dollar of indemnity against loss of his dwelling by fire. To-day this Co. insures 8 millions of property in brick and stone buildings, and holds 700,000 dol. of effective well-secured funds to indemnify the loss that may happen to them by fire. (See 1784.)

1754.—One of the Marine Ins. Cos. of Paris obtained permission this year to make ins. against fire; but the project met with very little encouragement. (See 1816.)

1755.—Nicholas Magens, in his famous *Essay on Insurance*, pub. in Hamburg this year, says:

> In *London*, ins. from fire are obtainable at such easy rates, that there are few merchants but chuse to be insured for their own quiet. Besides, the precaution adds to their credit, both at home and abroad, when it is known that the great capitals lying in their houses and warehouses are thus secured from the flames. Here [*Hamburgh*] the prem. on brick houses, or on goods lodged in brick houses, is but 2*s.* on each £100 to the value of £1000, and 2*s.* 6*d.* on each £100 to the value of £2000, and so on, except where hazardous trades are carried on—such as sugar-refiners, distillers, and chandlers; or on dangerous commodities, as hemp, flax, etc., as will appear by the proposals of the *London Ins.* Co., which has taken a very good and necessary precaution, by inserting the condition that whenever any houses are burnt, it shall be at the Co.'s option either to pay the loss or re-build them; for this takes away the temptation from all insured leaseholders of destroying their houses, as the landlords, and not they, would in such case be benefitted by it. And it is a similar good disposition, that when goods are burnt, the insurers have it in their choice either to make a pecuniary satisfaction or to repair the damage by a quantity of merchandize, equal in kind, value, and goodness to those damnified or lost; which effectually prevents any iniquitous people (who may have a parcel of goods on hand greatly fallen in price) from setting them on fire, in expectation of recovering from the insurers what they cost. However, as in Lond., some have maliciously set fire both to houses and merchandize, *no person should ever resent the strictest enquiry being made into the calamity; but a general mistrust in this particular ought to be esteemed needful, since it is for the public good that delinquents be discovered and brought to justice.* [Fire Inquests.] . . . On the other hand, it seems clear to us that the Corp. of Ins. may often blame themselves for too easily admitting and underwriting of pol. on household goods and wearing apparel from persons quite unknown.

1757.—By the 30 Geo. II. c. 19—*An Act for granting to H.M. several rates and duties upon indentures, leases, bonds, and other deeds; and upon newspapers, advertisements, and almanacks; and upon licenses for retailing wine; and upon coals exported to foreign parts; and for applying for a certain time the sums of money arising from the surplus of the duties on licenses for retailing spirituous liquors; and for raising the sum of £3,000,000 by annu. to be charged on the said rates, duties, and sums of money; and for making perpetual an Act made in the 2nd year of the reign of his present Majesty, entituled, 'An Act for the better regulation of attorneys and solicitors;' and for enlarging the time for filing affidavits of the execution of contracts of clerks to attorneys and solicitors; and also the time for payment of the duties omitted to be paid for the indentures and contracts* *of clerks and apprentices*,—under the 1st section, it was enacted that "for every skin or piece of vellum or parchment, or sheet or piece of paper, upon which shall be engrossed, written or printed in Gt. Brit., any indenture, lease, bond or other deed, for which a stamp duty of 6*d.* is payable, by virtue of an Act made in the 12th year of her late Majesty Queen Anne, over and above all other rates and duties by the said Act, or by any other Act of Parl. imposed, *an add. duty of* 1*s.*"

It must be remembered here that the duty of 2*s.* 4*d.* p. pol. granted in 1711 for 32 years had now expired; and therefore the 6*d.* of 1694, of 1698, and of 1713, constituted the stamp duty on ins. pol., until the vague words we have just quoted placed another 1*s.* upon them, making the stamp duty now 2*s.* 6*d.* [The Act 5 Geo. III. c. 35, declared pol. of ins. to be included under the above wording.] (See 1713 and 1765.)

1763.—By 4 Geo. III. c. 14, there was enacted the following important provision:

X.—And for the better preventing mischiefs that may happen by fire, and to deter and hinder ill-minded persons from wilfully setting their house or houses, or other buildings, on fire, with a view of gaining to themselves the ins. money, whereby the lives and fortunes of many families are lost; Be it further enacted, . . . That it shall and may be lawful to and for the respective governors or directors of the several ins. offices within the Cities of London and Westminster for insuring houses and other buildings against loss by fire, *and they are hereby authorized and required, upon the application and request of any person or persons interested in or entitled unto* any house or houses or other buildings, within the limits by this Act prescribed, which hereafter shall or may be burned down, demolished, or damnified by fire; *or upon any grounds of suspicion* that the owner or owners, occupier or occupiers, or other person or persons who shall have insured such house or houses or other buildings, *have been guilty of fraud, or of wilfully setting their house or houses or other buildings on fire;* to cause the ins. money to be laid out and expended, as far as the same will go, towards rebuilding, reinstating, or repairing such house or houses, or other buildings, so burnt down, demolished, or damnified by fire; unless the party or parties claiming such ins. money shall, within 60 days next after such claim shall be adjusted, give a sufficient security to the governors or directors where such house or houses or other buildings are insured, that the same ins. money shall be so laid out and expended as aforesaid: or unless the said ins. money shall be in that time settled and disposed of to and amongst all the contending parties, to the satisfaction and approbation of such governors or directors of such ins. offices respectively.

We have seen that as early as 1722 the *Royal Exchange* Corp. had incorp. into its regulations a similar provision. The having the power made part of the gen. statute law of the land was, however, a decided advantage to non-incorp. asso.

1765.—The 5 Geo. III. c. 35—*An Act for granting to H.M. certain duties on the exportation of coals; and of several East India goods; and upon pol. of assu.; for retaining upon the exportations of white callicoes and muslins a further part of the duties paid on importation; and for obviating a doubt with respect to stamp duties imposed upon deeds by two former Acts*—enacts (*inter alia*):

> IV.—And be it further enacted by the authority aforesaid, that from and after the said 1st day of June [1765] there shall be raised, levied, collected, and paid, unto H.M., his heirs and successors, for every skin or piece of vellum or parchment, or sheet or piece of paper, upon which shall be engrossed, written, or printed *any pol. of assu.* to be made or entered into within the Cities of Lond. or Westminster, or elsewhere within the Weekly Bills of Mort., over and above all other duties, an add. stamp duty of 2*d.*; and for every skin or piece of vellum or parchment, or sheet or piece of paper, upon which shall be engrossed, written, or printed, any pol. of assu. to be made or entered into within *all other parts of Gt. Brit.*, over and above all other duties, an add. duty of 2*s.* 6*d.*

By this Act pol. issued in Lond. became chargeable with a stamp duty of 2*s.* 8*d.*, and those issued in other parts of Gt. Brit. to 5*s.* (See 1757 and 1776.)

1766.—The first *Fire Escape* of which we have any record was made this year. For an account of their later development, see FIRE ESCAPES.

1759.—Cunningham, in his *Law of Bills of Exchange, Promissory Notes, Bank Notes, and Insurances*, etc., first pub. this year, purports to treat in sec. xiv. "Of Ins. from Fire." All he does, however, is to take bodily an extract from Magens (already noticed under date 1755), and give the "proposals" of the *London Assu.* Corp. and *Royal Exchange* in extenso. Not one word on the subject of F. Ins. beyond.

1770.—The first trace of F. Ins. which we find in the State of *New York* occurs under this date. At a sitting of the N.Y. Chamber of Commerce, held 3 April, this year, Mr. John Thurman moved that:

As it is the desire of a number of the inhabitants of this City to have their estates Ins. from Loss by Fire, and that losses of this sort may not fall upon individuals, proposed that the Chamber take into consideration some plan that may serve so good a purpose under the direction of this Corp.

We quote from the proceedings of the Chamber, which prob. gives the proposal in a condensed form. At the sitting 2nd May following it is recorded:

The proposal of Mr. Thurman to take into consideration some plan to be pursued in Ins. Houses from Loss by Fire is referred to a future meeting.

At a sitting of the Chamber 5 June, the consideration was again further postponed, and the subject was never again taken up during the Colonial period. (See 1787.)

1774.—There was enacted the 14 Geo. III. c. 78—a Building Act—the provisions of which were most important in regard to the interests of Fire Ins., not simply with regard to precautions of safety in building and fire prevention in general; but also in regard to F. EXTINGUISHMENT, under which head we have already noticed these in some detail. We review its provisions again under FIRE PROTECTION.

1776.—There was passed the 16 Geo. III. c. 34—*An Act for granting to H.M. several duties on coaches and other carriages therein mentioned; and several rates and duties upon indentures, leases, bonds, and other deeds; and upon cards, dice, and newspapers; and for raising the sum of £2,000,000 by annu., and a lottery to be attended with annuities*—by which it is enacted:

> 5. And be it further enacted by the authority aforesaid, that from and after the 5th day of July, 1776, there shall be raised, levied, collected, and paid, throughout the kingdom of Gt. Brit., unto and for the use of H.M., his heirs and successors, the rate and duty following: (that is to say) for every skin or piece of vellum or parchment, or sheet or piece of paper, upon which shall be engrossed, written, or printed in Gt. Brit. any indenture, lease, bond, or other deed, for which a stamp duty of 1*s.* is payable, by virtue of an Act made in the 30th year of the reign of his late Majesty King George II., over and above all other rates and duties by said Act, or by any other Act of Parl. imposed, an add. stamp duty of 1*s.*

This would have raised the duty on Lond. pol. to £3*s.* 8*d.* and on country pol. to 6*s.*; but the 6*d.* under the Act of 1713 had expired: the stamp duties were therefore 3*s.* 2*d.* and 5*s.* 6*d.* respectively. (See 1765 and 1777.)

Dr. Adam Smith, in his *Wealth of Nations*, pub. this year, supposed that taking the kingdom at an average, 19 houses in 20, or rather perhaps 99 in 100, were not insured against fire. When we see the proceedings of Gov. towards fettering and destroying the business by inordinate taxation, we need not be surprised if this supposition were true. [FIRES AND FIRE INS., STATISTICS OF.]

1777.—By 17 Geo. III. c. 50—*An Act for granting to His Majesty certain duties on licenses, to be taken out by all persons acting as auctioneers, and certain rates and duties on all lands, houses, goods, and other things, sold by auction; and upon indentures, leases, bonds, deeds, and other instruments*—it is enacted, by sec. 17, that from 5th July, 1777, there should be paid:

> For every skin or piece of vellum or parchment, or sheet or piece of paper, on which shall be engrossed, written, or printed in Gt. Brit. any *pol. of ins.*, whereby the property of one or more persons in houses or goods, or both, *shall be insured to a greater amount in the whole than* £1000, over and above the duties by any Act of Parl. already imposed, an add. stamp duty of 5*s.*

This raised the stamp duty on town fire pol., if over £1000, to 8*s.* 2*d.*; and on country pol., if over the like amount, to 10*s.* 6*d.* This should have led to spreading the risks among the different offices, and probably did.

By sec. 24 it was enacted, that if any person or persons should from and after the date named "sign, seal, execute, or subscribe any pol. of ins. or other deed, instrument, or writing, whereby houses and goods shall be *anyways insured from loss by fire*, to the amount or value as aforesaid, before the vellum, parchment, or paper whereupon the same shall be engrossed, written, or printed, shall appear to have been stamped and marked, as by this and the other Acts of Parl. in that behalf is directed," shall pay for every such offence the sum of £5; and no pol. should be available in law or equity until penalty and stamp duty were paid.

[Mr. George Coode, in his Revised Rep. on F. Ins. Duties, 1863, says this last-named Act imposed a duty of 1*s.* on pol. not exceeding £1000, in add. to the 5*s.* already named. We can find no authority for the statement in the Act, and regard it simply as a mistake on his part.] (See 1776 and 1782.)

1779.—The first proprietary Fire Ins. Co. in *Germany* was founded this year in Hamburg—the *Funfte Assecuranz Compagnie.* It existed down to 1842, when it was ruined by the great fire in Hamburg.

1780.—Of the early Fire Ins. Asso. whose orig. we have already noted, viz.

1667 Dr. Barbone's Office
1681 The Fire Office
,, The Corp. or Chamber of London
1686 The Friendly Fire
1696 Hand-in-Hand
1704 Lombard House Fire
1706 Exchange House Fire
1710 Sun
1714 Union
1717 Westminster
1720 British
,, British and Irish
,, Friendly Fire, Edin.
,, General
,, Globe, No. 1
1720 Overall's Fire
,, Rose Office
,, Saddler's Hall Ins.
,, Sword-blade Fire
1721 London Assu.
,, Royal Exchange
1777 Liverpool

—in all 21, there only existed at this date 9—viz.:

(1) Hand-in-Hand
(2) Sun
(3) Union
(4) Westminster
(5) British and Irish
(6) Friendly of Edin.
(7) London Assu. Corp.
(8) Royal Exchange
(9) Liverpool

We are now entering, as it were, upon the estab. of a *second series* of Fire Ins. Asso.

A movement was set on foot this year, we believe at the instance of the Lond. sugar-bakers or refiners, for founding an ins. office which should meet the requirements of their trade. An application was made to Parl. for a charter of incorp.; but the then Attorney-General (afterwards Lord Kenyon) declined to recommend H.M. to grant a charter; and the ground of his so declining was understood to be, that he considered *the public as likely to be better served by voluntary associations of respectable individuals than by incorp. sos.*—Sir F. M. Eden on *Ins. Charters* (p. 15, part 2).

This movement culminated in the estab. of the *Phœnix* Fire (No. 2) in 1782.

In this year was founded the first provincial fire ins. office of which we have any record in Gt. Brit.—the *Salop* Fire, which still flourishes.

1782.—This year constitutes a very important *landmark* in the hist. of F. Ins. It is the year in which the *per-centage duty on the sums insured* was first imposed. [Then 1*s.* 6*d.* p. £100 insured.] This was done under the authority of 22 Geo. III. c. 48—*An Act for charging a duty on persons whose property shall be insured against loss by fire.* The preamble sets forth:

> 'Most Gracious Sovereign,—We your Majesty's most dutiful and loyal subjects, the Commons of Gt. Brit. in Parl. assembled, being desirous to raise the supply granted to your Majesty in this Session of Parl. by ways the least burthensome to your Majesty's subjects, have freely and voluntarily resolved to give and grant unto your Majesty the duty hereinafter mentioned,' and do most humbly beseach your Majesty that it may be enacted; and be it enacted, etc., That from and after the 24th day of June, 1782, there shall be raised, levied, collected and paid throughout the Kingdom of Gt. Brit., unto and for the use of H. M., his heirs and successors, the yearly sum of 1*s.* 6*d.* upon every sum of £100, and so in proportion for any greater or less sum, that is or shall be insured by any person or persons, in or by any pol. of ins. for insuring houses, furniture, goods, wares, merchandizes, or other property from loss by fire.

Under sec. 2, ins. on public hospitals were exempted from the duty. Sec. 3 recited that "for the better and more effectually raising, levying, collecting, and paying the said duty hereinbefore granted," the same was to be placed under the government, care, and management of the Commissioners of Inland Revenue. Then the following:

> IV.—And be it further enacted by the authority aforesaid, That from and after the said 24th June, 1782, *no person or persons shall publicly or privately insure, or open or keep any office for insuring houses, furniture, goods, wares, merchandizes, or other property, from loss by fire in Gt. Brit., without first taking out a license for that purpose from the Commissioners for managing the stamp duties, in manner hereinafter mentioned.*
>
> V.—Provided always, and be it enacted, That nothing herein contained shall extend, or be construed to extend, to exclude the Corp. of the *Royal Exchange* and *London Assu.* (being chartered cos.) from assuring houses, furniture, etc., from fire in like manner as they now do, without taking out any license for the same.
>
> VI.—And be it further enacted, That from and immediately after the passing of this Act, the Commissioners for managing the stamp duties for the time being, or the major part of them, are hereby authorized and required, under their hands and seals, to grant a license for insuring houses, furniture, etc., from loss by fire, to all and every body or bodies politick or corporate, and person or persons applying for the same; which said license shall set forth the name or names or other description of the body or bodies politick or corporate, or person or persons taking out the same, and also the principal house or other place where such bus. of insuring houses, etc., from loss by fire, shall at the time of taking out such license be principally, etc., carried on.

By sec. 7 there was enacted a penalty of £50 per day, and twice the amount of the prems. received during such day, for setting up or keeping open an office for insuring houses, etc., or acting in any manner contrary to this Act. Persons taking out a license to give a bond (8). License to continue for one year. Then:

> X.—And whereas great part of the bus. of ins. against loss by fire is transacted at offices kept by cos. not incorp., but consisting of a great number of partners, be it therefore enacted, That where such bus. of insuring is carried on by cos. not incorp., or by a greater number of partners than 4, the license so to be granted, etc., shall be granted to such 2 or more of any such co. or partners as and for the whole co. or partnership; and in every such case the license shall continue in force until the end of the year from the day of granting the same, notwithstanding the deaths of all the persons to whom such license shall be granted, for the benefit of such co. or partnership.

Then follow a number of details regarding the collection of the duty and accounting for the same. If duty not paid before loss occurs, the pol. to be void (sec 12).

And so, with all this pomp and ceremony, came to be imposed, under the premiership of Lord North, that "tax upon prudence" which never had but one champion, and he a paid Gov. official [Coode]; while all thinking men saw in its inception no justification but a bankrupt exchequer—consequent upon a long series of exhausting wars; and felt that its retention was something like an insult to common sense. (See 1786.)

In this year was founded an important Fire Office, usually in these pages referred to as *Phœnix* No. 2. At its origin it was called *The New Ins.* Co. It is generally understood to have been founded in the interest of the sugar-bakers, as they were then termed, who imagined that the then existing offices had treated their risks with undue severity. The passage we have quoted under 1780 lends confirmation to this idea.

It may be mentioned as an historical fact that Lord North consulted Mr. George Browne, the then Sec. of the *Westminster* F., regarding the imposition of the duty upon F. Ins.; and by the advice of this gentleman, based upon his practical knowledge of the bus., the duty was levied in a very much less inconvenient form than had been orig. contemplated.

1783.—The duty on F. Ins. collected in E. and W. this year under the Act of last year amounted to £142,822, but this really included receipts for 401 days. The estimate for the year was £130,000, but this prob. included some septennial ins., as the duty for several following years showed a decrease. Or it may be that the duty operated as a discouragement to ins. The value of property insured (taken upon the £130,000 duty) is estimated at £170,533,330. The duty on foreign ins. effected in England was about

£2100. No return from Scotland was obtained until 1787, which would be for the year 1786. The amount was £1315.

The *Newcastle* Fire was founded this year, at Newcastle-upon-Tyne, and continued in existence down to 1860.

1784.—This year saw the formation of a second Fire Ins. Co. in Philadelphia—*The Mut. Assu. Co. for the Insuring of Houses from Loss by Fire.* This Asso. arose in the circumstances that the *Contributionship* had in the previous year sustained a loss by a house becoming ignited from its *Shade-tree;* and the Asso. in consequence refused any longer to insure houses having shade-trees. A number of members of the *Contributionship* therefore seceded and formed this new asso., selecting for its mark or badge a "green tree"; and the Asso. has been frequently called the *Green Tree* Ins. Co. It is still in existence. (See 1752 and 1787.)

1786.—It appears to have been the intention of the Legislature about this period to impose a duty *upon ins. of foreign property effected in England.* Inquiries were instituted, but the result, as we learn from Sir F. M. Eden, was to prove that a very inconsiderable sum would be obtained thereby, while the immediate effect would have been to lend encouragement to the formation of similar estab. abroad, and the consequent annihilation of a bus. of considerable advantage to this country.

There was now passed 26 Geo. III. c. 82—*An Act for the more effectually carrying into execution the laws relating to the duties on stamped vellum, parchment, and paper; and for repealing certain stamp duties on pol. for insuring property in any foreign kingdom or state from loss by fire.* Sec. 9 recites, "And whereas it is thought expedient to exempt *all pol. for ins. foreign property from loss by fire* from the said yearly duty;" and it is exempted accordingly. The amount of duty on these ins. had for the preceding 3 years averaged about £2100 p.a., the rate being 1*s.* 6*d.* p.c.

The *Phœnix* Fire (No. 2) of Lond. estab. an agency in Hamburg this year (1786). This is the earliest instance we find of an agency for a British Co. on the Continent of Europe.

1787.—In this year was pub. the first ed. of that work which afterwards became so famous: *A System of the Law of Marine Ins., with Three Chapters on Bottomry; on Ins. of Lives; and on Ins. against Fire;* by James Allan Park, of Lincoln's Inn, Barrister-at-Law. We have here to do with the last-named chap. only. The author says:

> An ins. of this sort is a contract, by which the insurer, in consideration of the prem. which he receives, undertakes to indemnify the insured against all losses which he may sustain in his house or goods by means of fire, within the time limited in the pol. To enter upon a detail of the various advantages which mankind have received from this species of contract, would be a waste of time: because they are obvious to every understanding. As little does it fall within the compass of my plan to enumerate the various offices that have been instituted for the purpose of insuring property against fire; or the rules and regulations by which they are severally governed. Some of them have been instituted by Royal Charter; others by Deed inrolled; and others give security upon land for the payment of losses. The rules by which these sos. are governed are estab. by their own managers, and a copy given to every person at the time he insures; so that by his acquiescence he submits to their proposals, and is fully apprised of those rules, upon the compliance or non-compliance with which he will or will not be entitled to an indemnity.

He then gives a very lucid outline of the few cases on F. pol. which had already been before our Courts; and concludes the chap. as follows:

> As the purest equity and good faith are essentially requisite, as has been already shown, to render the contract effectual when it relates to Marine Ins.; so it need hardly be observed, that it is no less essential to the validity of the pol. against fire; because in the latter, as well as in the former, the insurer, from the nature of the thing, is obliged in a great measure to rely upon the integrity and honesty of the insured, as to the representation of the value and quantity of the property, which is the object of the ins.

This is all that the great lawyer thought it necessary to state at this date regarding the Contract of Fire Ins. [FIRE INS., CONTRACT OF.]

We have recorded the attempt made in 1770 by the citizens of *New York* to obtain the protection of F. Ins. The first Fire Ins. Asso. actually estab. in that City was founded this year (1787)—*The Mut. F. Ins. Co. of the City of New York*, and it remained the only Fire Ins. Co. in the City down to 1796. On the 28th March, 1809, it became incorp. [See *Private Laws* of N.Y. 32nd Session, p. 154.]

A notice of it appeared in the *New York Packet*, 24th July, as follows:

> *Mut. Assu. Co.* for assuring houses from loss by fire in N.Y.—Whereas the ins. of houses and buildings from loss by fire has been found to be of great and public utility wherever it has been practised; and altho' sos. have been instituted in different places, yet none have hitherto been formed in this City for that laudable and beneficent purpose.
>
> A number of respectable citizens, as well for their own mutual security as for the common security and advantage of their neighbours and fellow-citizens, with the view of promoting the ins. of houses and other buildings from loss by fire on the most equal terms, and without any views of private or separate gain or interest, have established a Co. by the name of *The Mut. Assu. Co.* for insuring houses from loss by fire in N.Y.
>
> The utility of an institution in its purpose so laudable cannot fail to attract the notice of every citizen, being of so great importance to the security of property and the happiness of families, that it is presumed that no person of prudence will be found to neglect it.
>
> The Office is now opened at 57, King Street, where such persons as incline to insure their houses and other buildings may, on application, receive every necessary information.

This statement was signed John Pintard, Secretary, June 15th, 1787. In 1846 this Corp. changed its name to the *Knickerbocker* Fire Ins. Co., which it still retains. (See 1752.)

1790.—We propose to review the position of the per-centage duty on Fire Ins. decennially (unless special circumstances shall call for more frequent notice) in connexion with the changes in the position and numbers of the F. Ins. Offices. The duty collected in 1791, which would be upon ins. effected in this year, was in E. and W. £113,165; in *Scotland* £1851—total £115,016. The rate still being 1*s.* 6*d.* per £100 insured. The estimate of the total property insured in E. and W. upon this basis is £150,886,000.

Of the 9 Fire Ins. Offices which existed at the commencement of this decennium, and 3 since founded, making a total of 12, all were in existence.

During this year (1790) the *Worcester* Fire Office was founded.

The first *Floating Fire Engine* was manufactured about this date (1790). The invention was of significance in regard to the increase in mercantile risks by the water-side. [FIRE ENGINES, MANUAL AND STEAM, FLOATING.]

1793.—We come across the records of the Corp. of Lond. again at this date. The Corp. had been the first public body to bring into practice Fire Ins. It was now on the opposite tack. On 31 Oct. this year, a Committee, which had been appointed in the preceding Feb. to inquire into the State of the Finances of the City, made a recommendation "for discontinuing all ins. from fire in future." This was referred back to the Committee to reconsider, and state the several items and particulars for which the ins. therein mentioned had been made. In Nov. the further rep. came up. The ins. in force amounted to £46,300—the prem. and duty thereon £69 9*s.* annually. The ins. on the Mansion House had been discontinued in 1784. Those on Newgate, the Sessions House, and Giltspur Street Compter more recently. The discontinuance of all ins. from this date was resolved upon.

1794.—By 34 Geo. III. c. 3, of the *Statutes of the Parliaments of Ireland*, there was passed—*An Act for granting to H. M., his heirs and successors, several duties therein mentioned, to be levied by the Commissioners for managing the Stamp Duties.* The preamble sets forth:

> We, your Majesty's most dutiful and loyal subjects, the Commons of Ireland in Parl. assembled, being desirous to raise such aids and supplies as may be sufficient to support with honour and dignity your Majesty's Gov., do humbly present to your Majesty the free gift of the rates and duties hereinafter mentioned, and do beseech your Majesty that it may be enacted, and be it enacted by the King's most excellent Majesty, by and with the advice and consent of the Lords spiritual and temporal, and Commons in this present Parl. assembled, and by the authority of the same, That from and after the 25th March, 1794, until the 25th March, 1795, inclusive, there shall be throughout the Kingdom of Ireland raised, collected, levied and paid unto your Majesty, his heirs and successors, the several and respective rates, impositions, duties, charges and sums of money following—

Reference is here made to a Schedule of Stamp Duties, wherein is contained, among the articles chargeable (*inter alia*), any *pol. of ins. 2s. 6d.* In the body of the Act we have the following definition:

> III.—And be it enacted, That every deed, instrument, note or memorandum, letter, muniment or writing, for or relating to the payment of any sum of money, or for making any valuable consideration for or on the loss of any ship or vessel, goods, moneys, or effects, *or upon the loss by fire*, or for any loss whatsoever, or for or upon any life or lives, shall be construed, deemed and adjudged to be a pol. of ins., within the meaning of this Act.

Then by sec. 81 it is provided that no person shall publicly or privately insure, or open or keep open any offices for insuring houses or other property, without a license for that purpose granted by the Commissioners of Stamps. Then follow other provisions much the same as those of the 22 Geo. III. c. 48 (English Stat.), already quoted. By sec. 87 a *per-centage duty of* 1*s. p.* £100 *insured* is imposed; and then this special provision:

> 88. And for the more effectual prevention of frauds to evade the duty on ins. against loss by fire, be it enacted, That if any person or persons shall act as agent or agents for any person or persons, bodies politick or corporate, in publickly or privately insuring or receiving subs. for ins., or delivering out pol. or receipts for ins. against loss by fire, except for such person or persons, bodies politick or corporate, as shall be duly licensed as aforesaid, every such person shall for every such offence forfeit the sum of £100; and if any person or persons whose house or houses, furniture, goods, wares, merchandizes or other property, situate or being in this kingdom, shall be at any time between the 25th March, 1794, and 25th March, 1795, inclusive, insured from loss by fire by any person or persons, or bodies politick or corporate, not resident in this kingdom, shall omit or neglect to pay the said Commissioners the like duty after the rate of 1*s.* for every £100, as if such ins. were made by any person or persons licensed pursuant to this Act, every such person shall forfeit the sum of £50 for every such omission or neglect. . . .

By sec. 89 it is required that a printed receipt be given for the duty. The agents to deliver accounts and pay over duties at time and place to be fixed by the Commissioners by adv. in the *Dublin Gazette.* We thus now understand why separate accounts were kept by the offices of the duty collected in respect to ins. in Ireland. (See 1815.)

This year there was founded in the U. S. "*The Mut. Assu. So.* of Richmond," Va. The founder was Wm. Fredk. Ast, a Prussian, then residing in that City. The scheme of the So. was that of "Mut. Guarantee," supposed to be modelled after the system generally introduced by Frederick the Great into Prussia. We shall give some account of this system under FIRE INS., PERPETUAL.

This year also the Rev. David Wilkie pub. in Edin. a work on *Int. and Annu.*, in which the theory of Fire Ins. was expounded as follows:

> In the City of Edin. and its environs there are about 50,000 inhabitants; and of consequence, by

> allowing 5 persons to each family, there will be 10,000 families in that City and its neighbourhood: now supposing that £100 was insured upon each of these at 2*s.* 6*d.* p.a., this for each 1000 families would produce an ann. revenue to the Ins. Office of £125.
>
> Again, admit that 1 family out of 1000, or 10 out of the whole City, were exposed to the accident of suffering loss by fire yearly, which is a high proportion—and we trust seldom verified by experience: this would occasion an ann. loss to the office of £100 upon each 1000 families: of consequence there would be a saving of £25 yearly, besides int., to defray the expense of management upon each 1000 pol. at 2*s.* 6*d.* apiece. *Were the risks in large and small properties the same, being in proportion to their values, their pol. would be equal; but from the number of hands, fires, and lights, etc., employed, and from the connexion of the parts of a building, the risk attending £1000 cap. is greater than 10 times that attending £100 value.*

Therefore, to find the risk attaching to pol. of different values, he gives a simple formula (p. 224), and arrives at the conclusion that 3375 pol. should produce a yearly gain of £1374. We have not seen this mode of investigation pursued by any subsequent writer.

1797.—By 37 Geo. III. c. 90—*An Act for granting to H. M. certain Stamp Duties on the several matters therein mentioned, and for the better securing the duties on certificates to be taken out by solicitors, attorneys, and others practising in certain Courts of Justice in Gt. Brit.*—it is enacted (sec. 19), That from and after 5th July an add. per-centage duty of 6*d.* on each £100 insured against fire be imposed.

Sec. 23 recites—"And whereas certain stamp duties of 6*s.* and 11*s.* respectively [these amounts we suppose must result from the expiry of some of the stamp duties previously levied, but the fact is by no means clear] are charged by several Acts on every skin or piece of vellum or parchment, or sheet or piece of paper, on which shall be engrossed, printed, or written any pol. of ins. And whereas it is expedient that the said duties, *as far as the same relate to pol. for insuring houses, furniture, goods, wares, merchandizes or other property from loss by fire, should be repealed, and other duties granted in lieu thereof.*" It is then enacted that all former duties do so cease (except as to any arrears thereof); and sec. 23 imposes a stamp duty of 3*s.* on pol. of less than £1000; and 6*s.* upon pol. of £1000 and upwards. (See 1786 and 1804.)

The *Minerva Universal Ins.* Co. "for Fire, Lives, and Annuities," estab. this year, introduced a "new feature," as follows:

> Ins. from loss or damage by fire tends to the preservation of many families from poverty and ruin; and has been proved since the several respectable institutions for this purpose have been estab. in Gt. Brit., a measure of great importance to the extension and security of commerce and manufactures. A precaution subjected to such a moderate expense has given satisfaction to gentlemen and farmers; ease and tranquillity to merchants, manufacturers, and tradesmen: who only remonstrate that notwithstanding they have been fully indemnified for the value of their buildings, goods, and merchandize, from loss or damage by fire, they remain still unprotected from the destruction to which they are subjected by flagration: being unable to carry on their manufactures, etc., by the detriment the insured premises have sustained; or not occupying the house or shop in which they gained their livelihood, and loss of time in the way of trade. *Such complaints are removed* in the estab. of the *Minerva* Office.

In the 27th general regulation of the Co. we find the mode of remedy, which was as follows:

> That this inst. will not only indemnify the insured the losses or damages sustained by fire, to the amount of the sum for which the prem. has been paid, *but further, pay to all tradesmen, shopkeepers, and manufacturers, one add. tenth part of the insured sum, even if the losses amount to the full extent*, if the prems. are under 5*s.* p.c.; *and one-eighth if the prems. are above* 5*s.* *p.c.* Provided always, that the house or building where his manufacture or trade has been carried on *is damaged in such a manner that he cannot continue to conduct his business therein.*

The 28th regulation also contained a novelty: "That if persons ins. for more years than one, there will be an abatement of 6*d.* in the £ p.a. on the prems. agreed for, for every year except the first." [PROFITS, INS. OF.]

During this year was formed the *Norwich Union So.* for Fire Ins., which became the *Norwich Union* Fire in 1822.* The *Palladium* (No. 1), for Fire and Life, was also founded.

1799.—On the occasion of the promoters of the *Globe* Ins. Co. applying for a Charter, the managers of the *Sun* Fire petitioned Parl. against the same as follows:

> The humble petition of *the So. of London Insurers, commonly called the "Sun" Fire Office Co.* . . . That your petitioners humbly conceive that if the said Bill should pass into a Law, it will be a great prejudice to the interest of your petitioners, *by giving to the said intended Co. various privileges and advantages over your petitioners*, who have for a long series of years carried on the bus. of ins. against loss by fire within the kingdom of Gt. Brit., and have paid several millions of pounds to persons for losses sustained by fire, and a million and a half to the revenue of this kingdom in respect of the duty payable upon property insured against loss by fire.

A number of the principal members of the *Westminster* So. for Lives this year founded a Fire Ins. Co. under the title of the *British Fire Office*, to work in connexion with their So. as to agencies, etc.

The *Commercial* Fire, Life, and Marine Ins. Co. was founded in Dublin this year; as also the *Royal Exchange* of Ireland Fire, Life, and Marine.

1800.—The ann. amount of per-centage duty on Fire Ins. in E. and W. for the year ending 5 Jan. 1801 (duty upon ins. of 1800), was £204,947; and in *Scotland*, £3614—total, £208,561. The rate had been increased to 2*s.* p. £100 in 1797. The value of property *insured* in E. and W. was estimated at £204,946,000. The total value of insurable property was estimated by Sir F. M. Eden [confirmed by Sir John Sinclair, *Hist. of Revenue*] at £590,975,000. For details see FIRES AND FIRE INS., STATISTICS OF.

During the decennium now ending there had been founded 7 new Fire Offices; one of which had died out, leaving 6, which, added to the 12 existing in 1790, made a total of 18 then existing F. Ins. Offices.

1803.—An Act having been passed in 1799 authorizing His Majesty to incorp. the *Globe* Ins. Co., the promoters this year applied for such Charter of Incorp. They were, however, met by so many difficulties by the Lords of the Privy Council and the Law Officers of the Crown, that they (the promoters) ultimately resolved to, and did commence without any special charter. The main arguments used against granting the Charter may be condensed as follows:

That the existing unchartered offices, having paid large sums to the revenue, having provided engines, and a fire police, for the accommodation of the public, at a considerable expense, and furnished ins. to the full extent wanted, at the lowest rates at which (they contended) it could possibly be afforded, *had a reasonable claim, founded in justice, that no new ins. co. with chartered rights should be estab. by the authority of Parl.*

Sir John Sinclair, in the 3rd ed. of his famous *Hist. of the Public Revenue of the Brit. Empire*, pub. this year, proposed, or at all events advocated, a general plan of Fire Ins. with a view to aid the revenue. His precise words are:

"There is reason, then, to suppose, were a proper system adopted, that a large addition to the revenue might be made through the medium of Ins.: the best mode of obtaining which might be the estab. of respectable chartered companies under this regulation—*that one-half of the profit free from expense should belong to the public, subject to the payment of a certain proportion of the loss when any was sustained.*"—vol. iii. p. 292, 3rd ed.

In this year was passed the 43 Geo. III. c. 58, by which the malicious setting fire to houses and buildings was made felony without benefit of clergy. The provisions of this important measure will be give under FIRES CAUSED WILFULLY.

1804.—By the 44 Geo. III. c. 98—*An Act to repeal the several duties under the Commissioners for managing the duties upon stamped vellum, parchment, and paper, in Gt. Brit., and to grant new and add. duties in lieu thereof*—the preamble says:

'Most Gracious Sovereign, Whereas, the several rates and duties upon stamped vellum, parchment, and paper, and upon other articles and things under the care of the Commissioners for managing the said duties, are become very numerous, intricate, and complicated, and it will tend to give facility to bus. and contribute materially to the public benefit to consolidate and simplify the same,' be it therefore enacted, etc.

The former duties, etc., are then repealed as from 10th Oct. 1804. The Act proceeds:

II. 'And whereas the Commons of Gt. Brit. and *Ireland*, in Parl. assembled, towards raising the necessary supplies to defray the expenses of the just and necessary war in which your Majesty is engaged, have resolved to grant to your Majesty several new and add. and other duties on stamped vellum, parchment, and paper, and upon other articles and things, under the management of the Commissioners of the Stamp Duties, and do therefore most humbly beseach your Majesty that it may be enacted;' and be it therefore enacted, etc.

It is then enacted that from 10 Oct. the duties and allowances set forth in the Schedules to the Act come into force.

Schedule A provides different scales of stamp duty for Marine, Fire, and Life pol. We only deal here with F. pol.: "Pol. of assu. or ins., or any writing commonly so called, for ins. houses, furniture, goods, wares, merchandize, or other property from loss by fire, 1*s.*" The pol. stamp was therefore now reduced to 1*s.* on all pol. issued in Gt. Brit. and Ireland.

By schedule B it is set forth: "Ins. upon every sum of £100, and so in proportion for any greater or less sum that is or shall be insured by any person or persons, in or by any pol. of ins. for insuring houses, furniture, goods, warehouses, merchandize, or other property, from loss by fire, yearly 2*s.* 6*d.*" This was an increase upon the per-centage duty of 6*d.* p. £100. The exemptions were "Public Hospitals" and "Ins. made in Gt. Brit. for ins. any houses or furniture, goods, wares, merchandize, or other property within any foreign kingdom or state in amity with H. M., his heirs and successors."

These changes in the pol. stamps and per-centage duty extended to *Ireland*. (See 1797 and 1808.)

1805.—The first detailed return of the duty collected by the several individual Fire Offices in the U. K. was obtained in 1806 by Sir F. M. Eden. This return shows the duty collected during the financial year ending 5 Jan. 1806, by 11 F. Offices carrying on bus. in Lond.; 16 in the English provinces; 5 in Scot.; and prob. 2 in Ireland—the Irish returns not specifying the number. The duty was then at the rate of 2*s.* 6*d.* for each £100 ins. The total duty amounted to £337,312 2*s.* 1½*d.*, indicating the amount of property then ins. in the U. K. to be £270,000,000, of which prob. not more than £10,000,000 was ins. in *Ireland*. The full details are set out under FIRE INS., (PER-CENTAGE) DUTY ON. (See 1810, and 1831.)

The *Phœnix* Fire of Lond. estab. an agency in *New York* this year; and in some other cities of the States a few years later. See AMERICA, BRITISH OFFICES TRADING IN. (See 1814.)

1807.—During this year the *Eagle* Ins. Co. was founded. Its proposals set forth certain new and distinctive features in the bus. of Fire Ins. as follows: "The *rent* of premises insured with this Co., and rendered untenantable by fire, will be paid, without any increase of prem." "*Persons insuring property in the country* are entitled to a deduction ann. of 10 p.c. upon the prem. paid; and when ins. are made for more years than one, from 2½ to 15 p.c. upon the duty." "All buildings and goods within the water-side district must pay an add. prem. of 6*d.* p.c., on account of the risk attending such ins." "The Co. will make good to the assured any loss or damage sustained by lightning." The D. of Sett. of the Co. contained the following:

"23. Provided always nevertheless that if the buildings, ships, vessels, or other property proposed to be insured with the Co. shall be situated at a distance exceeding 10 miles from the Standard in Cornhill, in the City of Lond., a particular description in writing of such property shall be left at the office of the Co., signed by the party desirous of making such ins."

The *County* Fire, founded this year, introduced to Fire Ins. what in Life Ins. is designated the "mixed" principle: that is to say, while the engagements of the Co. are guaranteed by a proprietary cap., a portion of the profits are reserved for the pol.-holders. See our hist. of the Co. [COUNTY FIRE.]

The first reported Fire Ins. case before the American Courts occurs this year—*John L. Sullivan* v. *The Massachusetts* Mut. Fire Ins. Co.

1808.—By the 48 Geo. III. c. 49—*An Act for repealing the Stamp Duties on deeds, law proceedings, and other written or printed instruments, and the duties on legacies and successions to personal estates upon intestacies, now payable in Gt. Brit.; and for granting new duties in lieu thereof*—the same stamp duty of 1*s.* p. pol. is imposed. The per-centage duty is not interfered with. (See 1804 and 1810.)

During this year Mr. Alexander Annesley, of the Inner Temple, solicitor, pub.: *A Compendium of the Law of Marine Ins., Bottomry, Ins. on Lives, and of Ins. against Fire*, etc., wherein is given, with some variation in form, the information contained in Park (1787), and apparently, so far as F. Ins. is concerned, not one word beyond.

1810.—By 50 Geo. III. c. 35—*An Act for altering the mode of collecting the Duty on Ins. against loss by Fire upon property in H.M.'s islands and possessions in the West Indies, and elsewhere beyond the seas; and for exempting certain bonds and receipts from stamp duty; and for giving relief in certain cases of stamps spoiled or misused; and for explaining part of an Act passed in the 48th year of H.M.'s reign, for granting stamp duties in Gt. Brit.*—the preamble says (*inter alia*):

> And whereas many persons having property in *Trinidad*, and in other of H.M.'s islands and possessions in the West Indies and elsewhere beyond the seas, cannot procure the same to be insured against loss by fire to the amount desired by the public corp. or cos. by whom ins. against fire are most commonly made, and *they cannot procure ins. to be made upon such property by individuals*, because of the regulations of the said Act of the 22nd year of H.M.'s reign, which are found inconvenient as applied to them.

It is therefore enacted that from and after the passing of this Act it should be lawful for any person or persons in Gt. Brit. to ins. any houses, buildings, goods, wares, merchandize, and other property situate and being in any of the islands, settlements, or territories belonging to or under the dominion of H.M., his heirs or successors, in the *West Indies* or elsewhere beyond the seas, against loss or damage by fire, without taking out a license, and entering into a bond to H.M. persuant to the directions and regulations of 22 Geo. III. c. 48 (1781); or *without being liable to the said yearly duty imposed by the Act of* 44 Geo. III. c. 98 (1804); but subject nevertheless to the regulations and restrictions in the present Act contained.

Such ins. were (sec. 2) thereafter to bear a *stamp* duty (instead of a *per-centage* duty) of 2*s.* 6*d.* for each £100 or part of £100 over and above the duty of 1*s.* required on the pol. by former Acts not hereby repealed. And (sec. 3) no such pol. was to be made *for any longer period of time than one year.*

This was therefore only another form of collecting the per-centage duty. (See 1815.)

About this date there was pub. in pamph. form the *Fire Ins. Guide; an Impartial Guide to the Best and Cheapest Ins. against Fire; containing the Rates and Conditions of Ins. at the Fire Offices in Lond.; with an Alphabetical List of Hazardous Buildings, Trades and Goods, and the Various Prems. required at the Different Offices.* The offices enumerated were—Albion, Atlas, British, County, Eagle, Globe, Hand-in-Hand, Hope, Imperial, London, N. Union, Phœnix, Royal Exchange, Sun, Union, and Westminster. There was a list of hazardous buildings, trades, and goods given; an introductory explanation of the system of ins.; and then the points of difference in the conditions of these several offices were indicated. In the hazardous trades were included musical instrument *sellers*, as well as, and distinct from, the makers.

The amount of per-centage duty on Fire Ins. (which had undergone some changes in the rate) in E. and W. for year ending 5 Jan. 1811 (upon the ins. of 1810) was £434,158; in *Scotland*, £16,435; and in *Ireland*, £22,408—total, £473,001. The duty had been at the rate of 2*s.* 6*d.* p. £100 insured since 1805. The total amount of property ins. in E. and W. was estimated at £347,325,600. Of the above duty no less than £381,164 0*s.* 9*d.* was collected by 15 Lond. Offices, in the proportion set out in detail under F. INS., DUTY ON, at this date.

The *new* Fire Offices of the decennium were both numerous and important. In *London* there were founded the *Globe* (1803); *Imperial* (1803); *Albion* F. and M. (1805); *County* (1807); *Eagle* F. and L. (1807); *Hope* F. and L. (1807); *Atlas* F. and L. (1808). In the *Provinces*, the *Essex and Suffolk* (1802); *Kent* (1802); *Hants, Sussex and Dorset*, (1803); *Finchingfield* (1804); *Liverpool* No. 2 (1804); *Birmingham* (1805); *West of England* (1807); *Sheffield* (1808). While in *Scotland* there were founded the *Caledonian* (1805); the *Hercules* (1809) and the *North British* (1809). In *Ireland* the *Hibernian* (1808). Total new offices, 19. Of the 18 existing at the commencement of the decennium, 1 (the *Liverpool* No. 1) had passed away. The total number of F. Ins. Offices in the U. K. at this date therefore appears to have been 36.

1812.—Mr. Joseph Gregson pub. a pamph.: *Fires in London: or, Remarks on the Ignorance that prevails in regard to the manner of effecting Pol. of Ins.*

1814.—A pamph. was pub. entitled: *Life Ins.: Important Facts*, etc., understood to be written by Mr. J. T. Barber Beaumont, the able founder of the *County* F., wherein, speaking of the new fire offices then recently founded, and the competition in the rates of prem. in consequence, he added:

> Fire risks (unlike those of life) are as great in the *first* year of their ins. as in the *fiftieth*, and therefore may be felt and understood at once. These fire offices to raise a bus. pursued the obvious course of underselling, and almost immediately they were losing immense sums by their dealings. One is known to have suffered to the extent of some score thousand pounds. Here the evil cures itself as regards the public. The shareholders to be sure find their shares diminished in value a third or more, and that they have to forego their ann. dividends for some years. But it is not too late for them to amend their terms before all is lost.

A few years later these predictions were realized. (See 1826.)

In the early part of the present century the English Fire Offices commenced founding agencies in the U.S. (see 1805), but at the date we have now reached (1814) these agencies, so far as N.Y. was concerned, were closed. Kent, in his famous *Commentaries*, recounts the circumstances as follows: "Formerly the English F. Ins. Cos. were at liberty to ins. property in N.Y., by means of an agency estab. here. This was deemed by our citizens as the safest source, owing to their great capitals, to apply for indemnity against fire. But a different policy prevailed and finally gained the ascendancy with our legislature. A prohibitory Act applicable to such cases was defeated in April, 1807, and again in March, 1809, by the objections of the Council of Revision. But on the 18th March, 1814, the prohibition passed into law. The Council of Revision at that time abandoned their former ground, though the individual member who brought forward the objections on the two former occasions persevered in raising the same objections. The prohibition was orig. confined to all Foreign Ins. against Fire. But by the Act of May 1, 1829 (ch. 336), the prohibition was extended to *Marine Ins.* and *Bottomry.*" The law, we believe, remains even now prohibitory: the penalty being the payment into the State Treasury of 2*s.* p.c. p.a. on the prems. received.

1815.—By the 55 Geo. III. c. 101—*An Act to regulate the collection of Stamp Duties on matters in respect to which licenses may be granted by the Commissioners of Stamps in Ireland*—under sec. 14, the Commissioners of Stamps for the time being might under their hands and seals ann. grant licenses for ins. houses, furniture, goods, wares, merchandize, or other property against loss from fire to all and every body politic or corp. or person applying for the same, which license should set forth the name or names and other description of the cos. or persons applying for the same, and also the house or other principal place where such bus. should be carried on. In the case of *British* Cos. the license might be granted to the agent (s. 15). None but licensed persons or corp. to take ins. (s. 16). Making ins. without license to involve penalty of £40; and double the amount of prem. on pol. (s. 17). Agents acting for unlicensed persons to pay penalty of £40 (s. 18). Ins. made in *Ireland* for Brit. Cos. to be only liable for duty payable in Ireland, and to regulations in force in Ireland (ss. 19 and 20). Brit. Courts to take judicial notice of Irish stamps (s. 21). Bonds to be given by persons to whom licenses are granted (s. 22). Duty to be demanded on all ins. made, and a receipt to be given for same (s. 23). Cos. and agents to keep accounts, in default penalty of £500 (s. 25). Accounts to be delivered quarterly to Commissioners; penalty for default £40 (s. 26). Commission for collecting 5 p.c. (s. 27). Pol. of ins. defined (s. 28). (See 1816.)

In the same session of Parl. was enacted 55 Geo. III. c. 184—*An Act for repealing the Stamp Duties on deeds, law proceedings, and other written or printed instruments*, and the Duties on F. Ins., *and on legacies and successions to personal estates upon intestacies, now payable in Gt. Brit.: and for granting other duties in lieu thereof*—by which the recited Acts of 1804, 1808, and 1810, relating to duties on F. Ins. were repealed; and the duties mentioned in the Schedule to this Act imposed in their stead. It proceeds:

> 32. And be it further enacted that the *per-centage* duty on ins. against loss by fire granted by this Act shall be collected and received of and from the persons whose property shall be insured, for the use of H.M., his heirs and successors, by the public cos. or other person or persons licensed, or who ought to be licensed by the said Commissioners of Stamps, pursuant to the 22 Geo. III. c. 48; . . . and by the *Royal Exchange* and *London Assu.* Corps. respectively, at the time of their making, renewing, or continuing of, or receiving the prem. for the ins. in respect of which the duty shall be payable, and for the whole term or period for which the ins. shall be made, renewed, or continued; and such duty shall be accounted for and paid over in the manner directed by this and the said last-mentioned Act; and the *Royal Exchange* and *London Assu.* Corps. shall be subject to all the provisions and regulations of this and the last-mentioned Act, in the same manner as any other public cos., except only as to the taking out of a license from the said Commissioners of Stamps.

Accounts to be rendered by ins. cos. quarterly, supported by affidavit (s. 33). Ins.

cos. might make up accounts to their own quarter days (s. 34). Country ins. cos. to transmit accounts directly to Commissioners, if required (s. 35). Then:

> 36. And be it further enacted, That an allowance shall be made to the corp. or cos. and others collecting and receiving the said duties hereby imposed on ins. against loss by fire, and accounting for and paying over the same as required by this and the said Act 22 Geo. III. c. 48; that is to say, to those having their head office in *Lond.* or *Westminster*, an allowance at and after the rate of £4 p.c. on the amount of the duties collected and received at such head office; and at and after the rate of £5 p.c. on the amount of the duties collected by their agents out of Lond. and Westminster; and to those not having their head office in Lond. or Westminster, an allowance at and after the rate of £5 p.c. on the amount of the duties collected by them; provided they shall deliver their quarterly accounts containing all requisite particulars, and make payment of the said duties within the time prescribed by this or the last-mentioned Act.

We now turn to the Schedule to the Act, and find the following scale of stamps and duties:

On pol. of fire ins., stamp 1*s.* On every £100 insured after 28th Sept. 1815, a *per-centage* duty of 3*s.* [being an increase of 6*d.* per £100 insured]. *Exemptions*: Ins. on Public Hospitals, and on property in any Foreign Kingdom or State at amity with H. M., his heirs or successors. On pol. of ins. issued pursuant to 50 Geo. III. c. 35 (1810), insuring property in the *Colonies* for any period not exceeding *one year*, 2*s.* 6*d.*; and also "the further or add. duty following:" If the whole sum shall not exceed £100, 5*s.*; and if the whole sum shall exceed £100, then for each add. £100 or fractional part thereof, 5*s.* (See 1808 and 1828.)

1816.—By the 56 Geo. III. c. 56—*An Act to repeal the several Stamp Duties in Ireland, and also several Acts for the collection and man. of the said duties, and to grant new Stamp Duties in lieu thereof; and to make more effectual regulations for collecting and man. the said duties*—the *per-centage* duty imposed upon F. Ins. in *Ireland* was 2*s.* 6*d.* p. £100 insured; and in proportion for any fraction of £100 beyond; and in proportion for any fractional portion of a year.

The first Fire Ins. Asso. estab. in *France* as a distinct asso.—as early as 1754 one of the Paris Marine Ins. Cos. had power to issue Fire Ins. pol.—was founded during this year (1816): the Co. being *La Mutuelle de Paris pour les Immeubles*—"Paris Mut. Ins. Co. of Immovable Property." [FRANCE, sub-heading *Fire.*]

1819.—The F. Offices in *New York* estab. a classification of risks which was understood to be much in advance of anything previously existing. In the following year this classification was submitted to all the Cos. carrying on bus. there, and when concurred in, was understood to be binding on the concurring offices. We hope to give further details under N.Y.; or under U.S. (*Fire*).

1820.—The amount of per-centage duty on Fire Ins. in E. and W. for the financial year ending 5th January, 1821, was £586,898; in *Scotland*, £22,244; in *Ireland*, £21,737—total, £630,879. The rate had been at 3*s.* per £100 since 1816: but the duty on *Colonial* Ins. had been repealed since 1810. The value of property ins. in E. and W. was estimated from the duty at £391,265,300.

The *new* F. Offices of the decennium were almost *nil.* There was the *Bristol Union* F. and L. (1814); and the *National Union* Mut. and Fire. Nearly all the 36 offices existing at the commencement of the decennium were still existing; so that we have a total of 38 F. Offices in the U.K.

1821.—On the estab. of the *Beacon* Fire, this year, several features claiming to be new were introduced. These may be briefly enumerated here:—1. 25 p.c. reduction of prems. on ins. of private dwellings and household furniture therein, not deemed hazardous; together with an abatement of 5 p.c. on the Gov. duty. 2. Immediate payment (*i.e.* within one week) of 5 p.c. of the amount of any loss or damage to property insured with the Co. 3. The ins. of the *Rent* during the re-building of the premises. [RENT, INS. OF.] 4. The ins. of profits to tradesmen and others, by means of a weekly allowance during the period they should be deprived by fire of the means of pursuing their usual avocations. [PROFITS OF TRADE, INS. OF.] 5. The ins. of property *during any life or lives.* [F. INS. FOR TERMS OF YEARS OR FOR LIVES.] 6. The ins. of landlords against misconduct of tenants in placing hazardous goods or carrying on hazardous trades on the premises. One-third extra prem. was charged for this risk. [HAZARDOUS GOODS.]

1822.—The first proprietary Co. transacting F. Ins. bus. in *Austria* was founded this year; this is the *Azienda* of Trieste; but there were many mut. asso. for F. Ins. previously existing, and we suspect also some plan of municipal ins.

1824.—This was a period of great speculation in regard to joint-stock enterprise. A number of new F. Ins. Offices were founded, more particularly in the provinces; many of which were doomed to a speedy death. (See 1826 and 1830.)

1825.—There was founded the *Ægis Fire and Dilapidation*, etc., Co. The dilapidation feature was a new one, and was intended to provide for dilapidations at the end of a lease quite irrespective of any injury from fire. We mention it here only on account of its asso. with fire bus.

1826.—This year and the following were very fatal to the British Fire Offices. There succumbed the *Eagle* (founded 1807); *Hope* (1807); the *Ægis* No. 1 (1825); *Albion* (1805); *Beacon* (1821); *South Devon* (1824); *Surrey, Sussex, and Southwark*

(1825); *Royal Irish* (1823). The following year was also fatal in one or two cases. (See 1830.)

1827.—The first Ins. Co. estab. in *Russia* was chartered this year. It is called the *First Russian* Fire Ins. Co. The growth of the bus. has been rapid, more particularly of late years; and there are now some 10 stock cos. and several mutuals; while many of the British and at least one of the American Fire Offices have agencies there.

1828.—By 9 Geo. IV. c. 13—*An Act for further regulating the payment of the duties under the management of the Commissioners of Stamps on Ins. from loss or damage by fire* —it was enacted:

> That from and after the 5th day of April, 1828, in every case where any ins. from loss or damage by fire shall be made or renewed or continued upon 2 or more *detached buildings*, or upon 2 or more *buildings so separated from each other as to occasion a plurality of risks*, or upon goods, wares, merchandize or other movable property contained in 2 or more such buildings as above described, or lying or being in 2 or more places so separated from each other as to occasion a plurality of risks (except the implements and stock upon any one farm), then, and in any of the cases aforesaid, *every such separate building shall be separately valued, and a distinct and separate sum shall be insured thereon;* and in like manner at least one distinct and separate sum shall be insured on the goods, wares, merchandize or other moveable property, contained in every such separate building, or lying or being in every such separate place as aforesaid; *and it shall not be lawful to ins. one gross sum upon 2 or more such separate subjects or parcels as aforesaid, taken collectively.*

The penalty for insuring separate risks collectively, £100. But this was not to prevent separate buildings or property therein from being insured collectively if an *average clause* was contained in the pol. See AVERAGE POL. (*Fire*). The provisions of this Act were not to affect pol. issued before 5 April this year. ·(See 1815 and 1833.)

Mr. David Hughes pub. this year: *A Treatise on the Law relating to Ins.* The work contains over 600 pages, and but 11 pages are devoted to Fire Ins. Law. In these is contained a very fair digest of the points evolved from the cases under F. Ins. Contracts which had been before the British Courts.

In the case of *The King* v. *Bolton*, before the Court of King's Bench this year, 2 years' imprisonment were awarded to the defendant Bolton for conspiring to defraud the *Sun* F. by endeavouring to make the damage resulting from a fire appear larger than it really was. [SUN FIRE OFFICE.]

Messrs. Grun and Joliat published in *Paris* a treatise upon Fire and Life Insurance this year.

1829.—The Asso. of the Managers of the *Scotch* Fire Offices was formed this year; and its records exist from that date to the present time: constituting a valuable and interesting collection of facts in the Hist. of F. Ins.

The first *Steam Fire Engine* of modern construction dates from this year. The event is one of great significance in regard to Fire Ins. Their first slow, and afterwards rapid, development is traced in our art. F. ENGINES, STEAM. (See 1841.)

1830.—Kent, in his famous *Commentaries on American Law*, the 1st ed. of which was completed this year, devoted a few pages to Ins. against Fire. He commences his observations as follows:

> By this ins. the underwriter, in consideration of the prem., undertakes to indemnify the insured against all losses in his houses, buildings, furniture, ships in port, or merchandize, by means of accidental fire happening within a prescribed period. The prem. is usually paid in advance, and the contract effected by the parties without the intervention of a broker. *It has been made a question by some persons whether the negligence and frauds which the ins. of property from fire has led to, did not counterbalance all the advantages and relief which such ins. have afforded in cases of extreme distress.* But the public judgment in Eng. and in this country has long since decided the question with perfect satisfaction; and ins. cos. against fire have multiplied exceedingly, and extended their dealings to every part of the country, and excited and deserved public confidence, by reason of the solidity of their cap., and the skill, prudence, and integrity of their operations.

The ann. per-centage duty on F. Ins. collected upon ins. in E. and W. for the financial year ending 5th Jan. 1831, was £717,275; for *Scotland*, £51,579; for *Ireland* £29.222 —total, £798,076. The rate had been 3*s*. p. £100 insured through the decennium. The value of insured property in E. and W. at this date was estimated from the duty at £478,183,300.

The changes among the Fire Offices during the decennium now ending were considerable. The new offices were: ENGLAND (Town), the *Beacon* (1821); *Guardian* F. and L. (1821); *Alliance* F. and L. (1824); *Palladium* No. 2 F. and L. (1824); *Ægis* (1825); *Protector* (1825). In the Provinces the *Norwich Union* [based upon the *Norwich Union* of 1797] (1822); *Canterbury and East Kent* (1823); *Berkshire and Gloucester* F. and L. (1824); *Essex Economic* (1824); *Herts, Cambridge and County* F. and L. (1824); *Leeds and Yorkshire* F. and L. (1824); *Manchester* F. and L. (1824); *South Devon* F. and L. (1824); *Sussex County and Gen.* F. and L. (1824); *Yorkshire* F. and L. (1824); *Surrey, Sussex, and Southwark* F. and L. (1825); *Sheffield* F. and L (1826); *Shields, North and South* (1826); *Suffolk Amicable and Gen.* (1826); *Norwich Equitable* [new] (1829). In SCOTLAND the new Fire Offices were *Ins. Co. of Scotland* (1821); *Scottish Union* (1824); *Aberdeen* F. and L. (1825). In IRELAND, *National Assu.* F., L. and M. (1822); *Royal Irish* (1823); *Shamrock* (1823); *Patriotic* (1824); *Alliance*, Irish, F., L. and M. (1825); *Phœnix*, Irish (1825). In all (not counting *Norwich Union* as new) 29.

The F. Offices which had passed away, including those enumerated in 1826, were 14, among which we may specify the *British Commercial* (founded 1820); *Palladium* No. 2

(1824); *Bath*, Old (date of estab. not known); *Finchingfield* (1804); *Gloucestershire* (date of estab. unknown); *Canterbury and East Kent* (1823). The gain on the year appears to have been 14, leaving a total of 53 F. Ins. Offices existing. We suspect the number is slightly understated. In future we shall have the duty returns to help us.

1831.—From this year onwards the amounts of duty collected by the several English Fire Offices, Lond. and country, was pub. ann. by the authority of Parl. We have given the full returns for this year, as we shall give them, and decennially afterwards, in our art. FIRE INS., (PER-CENTAGE) DUTY ON. Amount collected by the Town Offices was £551,199; by the Country Offices, £201,605; total, £752,804. This, it will be observed, is much more than the total returned *for E. and W.* in the financial year ending 5 Jan. 1831. The solution is that some of the English Offices were effecting ins. in *Scotland*, as also in *Ireland;* and in these new returns the whole duty collected by each individual office in the several divisions of the kingdom was credited to it. The other return is for the geographical divisions.

1832.—Mr. F. G. Smith, then Sec. and Surveyor of *Scottish Union* Ins. Co., pub. in Edin.: *Practical Remarks on the Present State of Fire Ins. Business: the Evils of Competition pointed out, with Hints for Improvement.* The work presents a very fair resumé of the then state of Fire Ins., more particularly in Scot. In the preface occur the following passages:

> One of the greatest evils of the present day in this bus. is the inducement competition holds out to the commission of the crimes of arson, perjury, and fraud, for the purpose of defrauding ins. cos. This is a melancholy fact, and if not checked by some of the measures suggested in the following remarks, there is every appearance of its increasing to a most formidable and ruinous extent.
>
> The facility with which claims are now-a-days settled, for the sake of popularity (strict inquiry as to the *cause* of the fire being almost out of the question), holds out an inducement to the dishonest too strong to be resisted, as detection under the circumstances cannot be reasonably anticipated: hence fire after fire, without any satisfactory proof of being accidental.

Same year, Mr. Charles Ellis, Barrister-at-Law, pub.: *The Law of Fire and Life Ins. and Annu., with Practical Observations.* Up to this date the law of Fire and Life Ins. had not been made the subject of prominence; but had been generally dealt with in a few pages tacked on to works on Marine Ins. The Law of Fire Ins. was for the first time treated of in a lucid manner. The work at the period of its pub. was really valuable, and even now it may be consulted with interest. It passed into a 2nd ed. in 1846.

1833.—There was enacted the 3 & 4 Wm. IV. c. 23—*An Act to reduce the Stamp Duties on advertisements and on certain Sea Insurances: to repeal the Stamp Duties on pamphlets, and on receipts for sums under £5; to exempt Ins. on Farm Stock from Stamp Duties.* The following section relates to our present subject:

> V.—'And whereas it is expedient to exempt from the duties imposed by law on ins. from loss by fire all ins. on agricultural produce, farming stock and implements of husbandry in Gt. Brit. and Ireland respectively;' be it enacted that no ins. from loss or damage by fire which shall be made, renewed, or continued by any pol. effected upon or after the 24th day of June, 1833, on any agricultural produce, farming stock (live or dead) or implements or utensils of husbandry, being upon any farm or farms in Gt. Brit. or Ireland, shall be liable to the per-centage duties, or to any other stamp duty granted or imposed upon, or in respect of, ins. from loss or damage by fire by any Act or Acts in force in Gt. Brit. and Ireland respectively, provided such ins. shall be effected by a separate and distinct pol. relating solely to such agricultural produce, farming stock, implements or utensils.
>
> VI.—'And whereas by certain Acts in force in Gt. Brit. and Ireland respectively, the corp. or cos. or persons insuring against loss by fire are required to deliver to the Commissioners of Stamps, or their officers, certain quarterly accounts of all ins. made by such corp., cos. or persons, and containing such particulars relating thereto as in the said Acts respectively are specified in that behalf;' be it enacted that such corp. or cos. or persons insuring as aforesaid, at the time of the delivery of every such quarterly account, shall also deliver to the said Commissioners, or their officers, a separate and distinct account of all ins. of agricultural produce, farming stock, or implements, or utensils of husbandry, from loss or damage by fire, made, renewed or continued by such corp. or cos. or persons respectively, during the quarter for which such last-mentioned account shall be rendered; and in every such last-mentioned account there shall be truly specified the number of every pol. by which any such ins. shall be made, the sum or amount of the sums ins. thereby, and the time for which such ins. shall be made or renewed or continued; and for any default in the delivery of such account containing and specifying the particulars required by this Act, the corp. or co. or person or persons making such default shall forfeit the sum of £100.

For some time previously the agriculturists had endeavoured to escape from this impost, as they had escaped from some others. But the circumstances which immediately secured the passing of the measure were the following. Agrarian incendiarism—the burning of barns and ricks by the mysterious "Swing"—had for several years (since 1830 especially) prevailed very extensively, spreading alarm universally among the farmers. They hastened to insure their farming stock; but the cos. raised the prem. on account of the danger—in some counties to 3 or 4 times the former rate. As the object of the incendiaries was to terrify and injure, not the ins. cos., but the farmers and landlords, it was urged in Parl. that this object would be frustrated by relieving agricultural ins. from duty. Farmers would then insure more readily, and would care less and less for the machinations of the "Swing." These representations prevailed, and the impost on farming stock insurance became abolished (vide *Companion to Almanack*, 1864, p. 98). For returns of ins. effected pursuant to the Act, see FARMING STOCK INS. (See 1828 and 1860.)

Same year Mr. Geo. Beaumont, Barrister-at-Law, pub. *The Law of Fire and Life Ins.* A very concise and well-written little work, wherein all the principal decisions on points arising out of the contract of Fire Ins. are reviewed. In chap. 8, on Adjustment of Fire Losses, he remarks:

> In Life Ins. the loss must always be a total loss. In Fire Ins. there are partial and total losses. It is not the custom in F. Ins. to except any class of articles from the benefit of indemnity for partial loss which would be proper subjects for indemnity from total loss; though in Marine Ins. there is such a custom, whereby frivolous claims and complicated adjustments for breakage and spoiling of certain goods is avoided. . . .

He follows out the consequences of these distinctions on the contract of Fire Ins. 2nd ed. 1846.

1835.—The first detailed account of the Fire Ins. Duty collected by the Offices transacting bus. in *Ireland* was published this year. The 4 Irish Offices returned £9529 6*s.* 1*d.*; the 20 English and Scotch Offices trading there, £35,434 4*s.* 3½*d.* The full details are given under F. INS., DUTY ON, and will be given decennially afterwards.

This year M. Eugène Persil pub. in Paris: *Traité des Assurances Terrestres*, etc.

1836.—The first detailed return of duty collected by the *Scotch* Offices was pub. this year. It will be found in full under FIRE INS., DUTY ON.

The event of this year, viewed prospectively, was the estab. of the *Liverpool and Lond.* F. and L., which has more recently become, and still stands, as the largest ins. office in the world! [BOULT, SWINTON.]

1838.—By sec. 96 of 1 & 2 Vict. c. 56—*An Act for the more effectual relief of the Destitute Poor in Ireland*—it was held that ins. of workhouses in Ireland, made in pursuance of order of Poor Law Commissioners, were exempt from duty.

1840.—The ann. per-centage duty on F. Ins. collected upon ins. in E. and W. for the financial year ending 5th January, 1841, was £885,691; in *Scotland*, £59,746; in *Ireland*, £45,348—total, £990,785. The rate remained at 3*s.* But all *agricultural ins.* had been exempted from duty since the 24th June, 1833. The value of insured property in E. and W. was estimated at £641,448,716—including £50,988,016, the value of agricultural ins. exempted from duty.

In the return of duty collected by the *English* Offices, town and country, for this year, many changes, not only in the relative positions of the offices, but also in regard to the offices themselves, appear. Some offices had passed out of existence altogether; others had sprung up to take their places. Thus, while there were but 15 town offices returned in 1831, there were now 20; while as against 25 country offices in 1831, there were now but 23. But 12 *Scotch*, and 4 *Irish* offices were now brought into the returns—making a total of 59.

The new offices in ENGLAND embraced the *District* (1834); *York and Lond.* (1834); *Leicestershire* (1834); *Licensed Victuallers* (1835); *Newcastle and North of Eng.* (1835); *Nottingham and Derby* (1835); *St. George* No. 2 (1835); *Coventry and Warwickshire* (1836); *Independent and West Middlesex* (1836); *Licensed Victuallers* F. and L. (1836); *Liverpool and Lond.* (1836); *Protestant Dissenters* F. and L. (1837); *Shropshire and North Wales* (1837); *Benevolent* F. and L. (1838); *English and Scottish Law* F. and L. (1839); *Lond. Edin. and Dublin* F. and L. (1839); *Church of England* F. and L. (1840); *Royal Farmers* F. and L. (1840). In SCOTLAND, *County and City of Perth* (1836); *Glasgow* (1836); *Metellus* (1838); *North of Scotland* (1837); *Forfarshire and Perthshire* (1838); *Morayshire* (1840). Total, 24. Four of which were strictly class offices.

The offices which had passed out of existence were the *Independent and West Middlesex* (1840); *Protector* (1835); *Bath Sun* (1838); *Berks, Gloucester and Provincial* (1831); *Bristol* (1839); *Bristol Crown* (1837); *Coventry and Warwick* (1839); *Hertford, Cambridge and County* (1831); *Newcastle and North of Eng.* (1838); *Norwich Equitable* (1834); *Salamander* (1835); *North and South Shields* (1836). In SCOTLAND, the *Metellus*; and in IRELAND, the *Commercial* (1837); and the *Hibernian* (1838). Total discontinued, 15; leaving gain of 9 on the decennium.

This year, Mr. Elisha Hammond, Counsellor-at-Law, pub. in New York: *A Treatise on the Law of Fire Ins.; and Ins. on Inland Waters; in two parts, with an Appendix of Forms.* This work contains an excellent resumé of the Ins. cases in the U.S., combined and compared with those in Gt. Brit.; and hence it had an especial value at the date of publication, and for some years afterwards.

1841.—Mr. Thomas H. Millar, Accountant, Edin., pub.: *A Practical Introduction to Life and Fire Ins.*, etc., wherein was contained a "description of fire risks, with the rates of prem. demanded therefor." The author says in his preface:

> A description of risks against loss by fire, with the rates of prem. usually required by the most respectable F. Ins. Cos., and many important clauses necessary to be inserted in pol. issued for hazards of a particular or special class, have been introduced; and it is believed the present is the first attempt to furnish for the use of the public this information (acquired by extensive official experience as well as from other sources) in this department of the bus. of assu.

The work will be again referred to under FIRE INS. PREMS.

Mons. G. Sautayra pub. in Paris: *De l'Assurance contre l'Incendie, précédé d'une Introduction sur les Assurances en général.*

The first *Self-propelling Steam Fire Engine* was made this year in New York. No further progress was made until 1859. [F. ENGINES, STEAM, SELF-PROPELLING.]

1842.—By 5 & 6 Vict. c. 79—*An Act (inter alia) to amend the laws relating to Stamp Duties*—it was enacted (sec. 20) that licences granted under 22 Geo. III. c. 48 (1782), should endure and remain in force so long as the co. or person named therein should continue to carry on the bus. of F. Ins. Security to be given for payment of duties also to continue in force so long as the licence should continue.

By c. 82 of the same session, the Stamp Duties on F. Ins. in *Ireland* were assimilated to those in *England* for a period of 3 years.

The year 1842 will long be memorable in F. Ins. hist. as one of almost unexampled calamities to those offices undertaking mercantile risks. In the month of May occurred the great fire at *Hamburg;* followed later in the year by several destructive conflagrations at Liverpool. It was in some measure consequent upon the complications arising in the settlement of the last-named losses that the *Independent Liability Clause* was devised for mercantile ins. in that borough, and which continued in force there until 1860. [INDEPENDENT LIABILITY CLAUSE.]

1844.—This year was pub. the *First Rep. of the Commissioners for Inquiring into the State of Large Towns and Populous Districts.* One of the subjects of inquiry which had been remitted to the Commissioners was: "The supply of water in such towns and districts, whether for the purposes of health, or for the better protection of property from fire." A great deal of the information elicited by the Commissioners has already been given under FIRE EXTINGUISHMENT; but the following passages from the evidence of Mr. T. Hawksley, C.E., will be read with interest here:

Q.—If preventitive arrangements were made on a comprehensive and efficient scale, and a fair remuneration afforded for the cap. invested, is there any reason to doubt that such arrangements would effect a large pecuniary economy, independently of the necessary abatement of the pain experienced in society from continually witnessing and apprehending devastation and loss of life by fire? *Ans.*—It cannot be doubted that much of the usual loss by fire would be entirely prevented; nevertheless the reduction upon ins. would be comparatively trifling. The charges of ins. cos. are made up of the Government duty, the cost of man. and agency, the int. of cap., and the proportion necessary to replace the losses by fire. The Government duty, which amounts to two-thirds of a common insurance, would remain unaltered, and the other items, except the proportion of charge necessary to replace losses, would be little affected. In consequence of the very unnecessary number of ins. offices, the cost of management is very considerable, and the investment of cap. unnecessarily great. It is believed that not more than 1*s.* is charged in respect to risk upon an ins. for which 4*s.* 6*d.* is paid. From this it follows that the reduction of the rates of ins. consequent upon the adoption of preventitive arrangements cannot, except in very special cases, be considerable.

Q.—It is stated in the answers from *Philadelphia* [FIRE INS. PREMS., 1844] that "the present system of watering the city has reduced ins. risks in the proportion of 1 to 3 upon the real estate, but not upon goods, wares, and merchandize: these are considered almost as a total loss from the damage by water." Speaking of ins. risks in general, as affected by all the improved arrangements attendant upon the change of system, it is stated that those risks are taken at one-half the prem. chargeable in other cities where the arrangements are incomplete. Is it the fact that on the introduction of the system of constant supply at high pressure at *Nottingham*, an ins. co. was got up for *Nottingham* on the ground that the increased security obtained by the improved supply of water would render ins., on the ordinary terms, a peculiarly safe and good investment? *Ans.*—Yes; for though this might not be stated in the prosp., it was held out as an inducement to persons to become proprietors. *The Trent Waterworks was urged on these grounds to become an ins. co.* But that co. thought the scheme was not within their line of duty, and they therefore declined to take it up, and then other parties took it up.

Q.—Has there been a co. formed on the ground of the prem. being lower in consequence of these improvements in the supply of water? *Ans.*—No; the prem. is no lower at all. *I think it was formed that they might thereby be enabled to secure to themselves the profits which the Lond. Cos. would otherwise get.*

The *Nottinghamshire and Derbyshire* Ins. Co., founded 1835, is the co. here referred to.

It was estimated, on what was regarded as good authority, that the F. Ins. in force in *France* by the proprietary cos. this year amounted to £728,200,000; and that the prem. thereon reached the sum of £713,200. The ins. in the mut. cos. was estimated at £240,000,000 in add., making a grand total of £1,025,000,000.

In our art. FIRE INS., MUNICIPAL AND STATE, under this date, will be found some interesting statistics regarding State F. Ins. in *Denmark* and in *Poland.*

1845.—A tornado accompanied with lightning occurred in the neighbourhood of Rouen, causing great devastation of property. The Court Royal of Rouen in a decision given the following year (Feb. 1846) brought that case within the scope of the fire ins. effected on the property destroyed. [LIGHTNING.]

Mr. T. Chambers and Mr. G. Tattersall pub. this year: *Laws relative to Buildings, comprising the Metropolitan Building Act, Fixtures, Ins. against Fire,* etc. [FIRE PROTECTION.]

Among the new F. Offices of this year are two calling for very especial notice, viz. the

Law and the *Royal.* These two rank among the more remarkable joint-stock cos. of the present generation.

1846.—A proposal for carrying on F. Ins. as a branch of State Finance was propounded in *Belgium* about this time; and a Commission was appointed to inquire into and report upon the subject. We have reviewed the results briefly in our art. BELGIUM; while under F. INS., MUNICIPAL AND STATE, we shall give some further details of great interest.

Mr. G. M. Dowdeswell pub. this year: *The Law of Life and Fire Ins.*, etc. The work takes a rapid glance at the history of the different branches of Ins., including Fire; and is written in a style at once pleasing and instructive. It was, in fact, written at the request of the So. for the Diffusion of Useful Knowledge; at the period that So. contemplated a series of popular treatises upon legal subjects.

A 2nd ed. of Ellis on *Fire and Life Ins.*; as also of Beaumont on the *Law of F. and L. Ins.*; was pub. this year.

1847.—Mr. W. E. Hillman, then Act. of the *Star*, pub.: *Illustrations of the Theory and Practice of Assurance*, wherein he attempted to popularize the various branches of the bus. The author says in his preface:

> There is, however, one branch of assu. treated of in the "Theory," which has not been sufficiently attended to in works which have gone before:—The branch referred to is "Fire Assu."; and should its mention be the means of calling more consideration to the subject, a positive good will be attained. The man. of F. Ins. Cos. have been deterred, no doubt, by the labour of investigation, from collecting the facts from their "Registers" and "Loss Books," for a better classification of risks and prems. The author has no doubt, now that the spirit of rivalry between cos. is somewhat abated, that the time is approaching when these matters will receive proper attention; and the present loose and almost undefined method of estimating prems. will give place to one of a more scientific and definite nature; and the reproach be taken away which now attaches to this part of Ins. bus.

Some of the points he touches upon will be noted under FIRES AND FIRE INS., STATISTICS OF.

1848.—The amount of property insured against loss by fire in the U.K. was £811,000,000; and the nominal cap. subscribed to guarantee the due fulfilment of these engagements at the end of 1849 was computed at more than £50,000,000 by 59 cos.; some of them, however, guaranteeing under the same cap. also life and marine risks.

About this date the Gov. of *France* was seriously contemplating the desirability of carrying on the bus. of F. Ins. as a means of State Finance. [FIRE INS., MUNICIPAL AND STATE.]

1849.—On the night of 6 Oct. the warehouse of Messrs. Gooch & Cousins, wool warehousemen, in London Wall, was burned down. The warehouse was a very large one, devoted exclusively to the storing of wool, and held at the time of the fire not less than 3606 bales of wool. The fire spread to every part of the building, and in the morning there appeared to the spectators to be nothing left but a blackened heap of worthless ashes. A little investigation, however, showed that underneath these unsightly remains lay, as the result proved, a very considerable value of salvage. The value of the 3606 bales of wool was £70,339. The salvage realized no less than £26,974—or about 37 p.c. of the gross value of the property. But this is by no means the most important part of the story. Out of this event arose one of the most important APPORTIONMENTS of modern times, leading to the adoption of many rules, if not of scientific exactitude, yet of great practical importance. We may complete the narrative in the words of Mr. Richard Atkins:

> The variety and number of interests involved in this large property gave rise, as might be expected, to very important discussions, and brought to the test almost every known principle and form of settlement. There were as stated 3606 bales of wool. No less than 73 owners appeared. Some were owners in their own right, and others simply as factors and agents. Some portions were ins. by specified, others by average pol. of every variety. Others again were wholly uninsured. Some of the proprietors, by themselves, or by their agents, had already put in their claim to portions of the salvage—being able by trade marks or otherwise to identify those portions. With the exception of these the whole body of owners were entitled to a *pro rata* share of salvage, whether ins. or not. To add to the complication, many cases appeared where the expiration of the days of prompt—or the partial payment for goods sold, but not finally trans., and other similar transactions—made the legal ownership in these cases, to say the least, very doubtful. But happily the whole of these settlements being entered upon in a fair spirit of commercial equity, were promptly and satisfactorily arranged. . . .
>
> The records of these transactions will long continue to be of use for the purpose of reference. Many important points of practice were brought forward for discussion among the parties, having such a variety of interests in the damaged goods. There are but two of these points to which it is necessary to allude in this place. The principle laid down that *average* pol. should be brought forward for settlement in the order of their extent, was throughout universally admitted and acted on. The whole of the offices, without any exception, held themselves bound by it, not only in reference to the assured, but also as between each other; and this was done in many cases where the strongest motives of interest existed for disputing the rule.
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> A not less important law was in add. laid down to regulate the settlements. The warehouse-keeper's book in all cases was taken as the test of ownership. Although many transactions in the nature of partial trans. had taken place, which might have thrown legal doubts as to the parties in whom the actual interest was, at the moment of the fire, vested, the entries in the warehouse-book were by common consent taken as decisive on the point. The claims upon the offices, and the divisions of the salvage, were all made upon this simple and impartial rule. The early adoption of this equitable law fortunately prevented many differences of opinion, which, had they been argued upon strictly legal grounds, could only have ended in the most expensive and protracted litigation.—Atkins on *The Average Clause*, p. 26. See also SALVAGE (*Fire*).

1850.—Mr. Samuel Brown contributed to vol. i. of *Assu. Mag.* under date this year, a paper: *On the Fires of Lond. during the* 17 *years from* 1833 *to* 1849 *inclusive, showing the numbers which occurred in different trades, and the principal causes by which they were occasioned.* The contents of this paper will fall to be noticed more particularly under F. INS., STATISTICS OF; but the opening remarks may with advantage be reproduced here:

> Until within a very recent period the doctrines of prob. have been applied to scarcely any great public purpose except the assu. of human life. In that particular department of knowledge a number of labourers have been for many years busily occupied in gathering in facts, endeavouring to classify events and trace some general laws. In later years researches have been extended into the effect of different classes of diseases upon health and longevity. Still more recently, the calculations of fidelity risks, of railway and other accidents, of bankruptcy, and of other circumstances affecting the person of an individual or his commercial dealings, have been made with a view of proving their capability of being estimated for ins.
>
> It is remarkable that in the midst of all these inquiries, the classes of ins. for which Eng. first became famous, and which in fact, by their early success, led to the still more extraordinary progress which has distinguished the system of Life Assu., viz. Fire and Marine risks, have been almost wholly neglected as matters of statistical research. . . . The immense collection of data which must have been gathered for upwards of 130 years, in the books of some of the older cos., would present many very curious results, both as to the actual facts regarding the frequency and the extent of damage by fire, as well as to the changes in the values of property of various kinds in all parts of the kingdom. They would serve to indicate, also, the gradually improving condition of the public mind, by the increasing desire of the people to avail themselves of the advantages offered by the system of ins. . . .
>
> The skill and judgment which has hitherto distinguished the managers of that class of bus. in the selection of the risk, so far from being rendered valueless by the general conclusions drawn from a comparison of events, would be more than ever appreciated by the insured, from their perceiving the difficulty of classifying the risks under their proper heads, and the study and attention which must be given to attain success. Not only would curious information be afforded, but some obs. of great utility to the public prob. secured. Thus, the proportion of fires according to the different trades, would exhibit the greater or less hazard with which various occupations are attended from this cause; and if the causes were stated in each division, attention would be directed so as to ascertain what dangers were inherent in the nature of the bus., and what might arise from circumstances capable of being remedied, and the risks diminished. Most of these facts are, no doubt, already known to those connected with ins. cos. whose bus. it is occasionally to compare them. But it does not fall within the scope of their duty to warn the public of consequences; and till these are forced upon the notice of the public, or of authorities competent to interfere, no remedy will be proposed, and no corrections applied.

In the same vol. of the *Assu. Mag.* (i. p. 317) is an art., also from the pen of Mr. Brown, on the *Increase of F. Ins. in Gt. Brit. from* 1844 *to* 1850; wherein it was shown that the rate in the sums insured by all the offices had been 10·39 p.c., or 1·73 p.a.; for the last 2 years of the period the increase had been 1·96 p.c. p.a. The increase in the "Town Offices" during the whole period had been 12 p.c., or 2 p.c. p.a.; in the last 2 years 2·78 p.c. p.a. In the "Country Offices" the increase over the whole period had been 2·29 p.c.; but in the last 2 years only 1·08 p.c. p.a. On the "Farming Stock" ins., the increase from 1844 to 1848 had been 7·14 p.c., or 1·785 p.c. p.a.; but between 1848 and 1850 there had been a falling off; so that over the whole period the increase had only been 4·1 p.c. or ·683 p.c. p.a. But these ins. fluctuate with the seasons. In *Ireland* the progress of F. Ins. had been slow. In the 6 years the increase was only 2·90 p.c., or 8·48 p.c. p.a. In *Scotland* there had been an actual falling off; but there were signs of recovery.

In *France* at the end of this year (1850) the amount of ins. existing in the 13 proprietary cos. was £1,038,422,803—of this £490,000,000 was ins. in 3 offices only; while in 41 mut. asso. the ins. only reached about 280 millions—making the grand total £1,318,433,804. The rate of increase in the last 2 years had been very nearly 8¼ p.c. The total prems. received in the proprietary cos. in 1850 was £902,260—yielding an average of 1*s.* 9*d.* p.c.—a very low rate when taking all classes of ins. into account. The losses in the proprietary cos. were £445,468, or rather less than 50 p.c.

By 13 & 14 Vict. c. 97 (1850)—*An Act to repeal certain Stamp Duties, and to grant others in lieu thereof; and to amend the laws relating to the Stamp Duties*—fire ins. licences granted in Ireland were made permanent, as in England under the 5 & 6 Vict. c. 79 (1842).

The *Equitable* Fire Office, founded this year, claimed credit for the introduction of the "mixed principle," as applied to fire ins., which however had been introduced by the *County* Fire in 1807. The prosp. of the *Equitable* contained the following remarks, which embody the creed of the non-tariff offices:

> The difficulties of collecting the elements on which to proportion prems. to risk in ins. against loss by fire are undoubtedly very great. It will scarcely, however, be doubted by those who have paid attention to the statistics resulting from the past experience of the various offices, *that a lower scale of prems. than what are usually charged may in many cases be safely adopted:* it being evident that what in one locality would be an ordinary risk, might, from the absence or presence of some influencing cause, become hazardous or doubly hazardous in another, and *vice versâ*. It is further evident, that by the exercise of a sound discretion in the selection of risks, the honest and careful may, to a great extent, be relieved from the payment of a rate of prems. higher than what is necessary to cover their own risks, but which must necessarily be imposed where less caution is observed, to enable cos. to meet the losses incurred through carelessness or fraud.
>
> The bus. of the *Equitable* F. Ins. Co. is conducted rigidly upon these principles; and by a frequent analysis of its own experience, it will, from time to time, adopt such rates of prem. as the nature of the risk may justify, and accordingly will abstain from entering into any arrangements with other cos. as regards tariffs: not however for the purpose of depreciating or casting the smallest discredit upon

> those cos. which have pledged themselves to the observance of a certain tariff, but simply because any concerted agreement upon the subject of price necessarily partakes of that spirit of monopoly which is not less contrary to the increasing intelligence of the age, than it is opposed to every sound principle of political economy. The proceedings of the *Equitable* will be carried on in perfect fairness and friendliness towards all other cos.; but free competition is essential to the true and healthy adjustment, as well as full development, of perfect economy in supply and demand. At the same time, anything like a wish to undersell, merely for the sake of making a *large* bus. without regard to its *safety*, is utterly disclaimed. The field is abundantly large for all; and if, consistently with perfect security, the cost of ins. can be lowered, whether in the way of accepting, when circumstances may justify it, a lower rate of prem., or, which is certainly the safer form, in the way of returning a share of the profits to the insured, as in the *Equitable* Co., without any doubt it will be found true, in this as in all other cases, that increased facilities of supply will, in a still greater ratio, increase the amount of demand, and prove equally beneficial to the cos. conducted upon such enlightened principles, and to the public at large.
>
> With this view, a periodical investigation will be made into the affairs of the So., and a return of one moiety, or 50 p.c. of the net surplus or profits, after deduction of such portion as may be considered necessary as a reserve fund, will be made to all classes of insurers whose pol. shall have been in existence for 3 years, and who shall not, during that period, have made any claim upon the So. for compensation for loss by fire.

Like many other such well-intentioned enterprises, this fell very short in the matter of performance. In the hist. of the Co. we have shown how it was overweighted with expenses from the beginning; and although it speedily reached a large prem. income [£34,697 in 1853], it fell an early victim to over-sanguine expectations, combined with extravagant management.

The ann. per-centage duty on F. Ins. in E. and W. for the financial year ending 5th January, 1851, was £1,042,396; in *Scotland*, £65,875; in *Ireland*, £51,259—total, £1,159,530. The rate had remained at 3*s*. The value of insured property in E. and W. was estimated at £752,092,946, including £57,162,246 amount of agricultural insurance exempted from duty.

The *new F. Offices* estab. in ENGLAND in the decennium were—

1841 South of England F. and L.
1844 Burnley Mut.
,, Cambrian F. and L.
,, Kent Mut.
,, North of England F. and L.
,, Preserver F. and L.
1845 Cambrian and Gen. F. and L.
,, Halifax, Bradford, etc., F. and L.
,, Law.
,, Preston and North Lancashire.
,, Royal F. and L.
,, Sheffield, Rotherham, etc.
,, Star.
1846 Legal and Commercial.
1847 Architects and Builders F. and L.
1847 Defender F. and L.
,, North of England F. and L.
1848 Brit. Emp. Mut.
,, National Mercantile.
1849 Anchor F. and L.
,, British F. and L.
1850 Equitable.
,, Brighton and Sussex Mut.
,, English and Cambrian F. and L.
,, National Guardian F. and L.

In SCOTLAND the new Offices were—

1841 National and Scottish F. and L.
1844 Western F. and L.
1845 Bon Accord F. and L.
—Total 28.

The Offices which ceased to exist in the decennium were, in ENGLAND, the *Benevolent* (founded 1831), *Brighton and Sussex* (1841), *Bristol Union* (1844), *British* (1843), *English and Scottish Law* (1843), *Leicestershire and Midland* (1843), *Preston and North Lanc.* (1848), *Reading* (1841), *Winchester, Hants*, etc. (1847), *York and Lond.* (1842). In SCOTLAND, *County and City of Perth* (1844), *Friendly* (1847), *Glasgow* (1841), *Western* (1847). In IRELAND, the *British and Irish* (1843). Total 15, leaving a gain of 13 in the decennium. It is noticeable that two of the offices which passed away dated from 1720, viz. the *Friendly* of Edinburgh, and the *British and Irish* of Dublin.

1851.—Mr. C. J. Bunyon, M.A., contributed to vol. i. of *Assu. Mag.* a paper: *On the Liability of the Occupier of a Tenement for Damage done to that of a Neighbour, by Fire kindled through his own or his Servants' Negligence.* This question will be reviewed under title FIRES CAUSED BY NEGLIGENCE.

Mr. Samuel Brown read before the Inst. of Act. a paper: *Sketch of the Recent Progress of the Assu. of Life and Property on the Continent* [*Assu. Mag.* vol. i. p. 293; vol. ii. p. 16]. The contents of this paper will be noted under the different countries to which they relate—especially under FRANCE.

During the same year [year of the first great International Exhibition, sometimes styled World's Jubilee] a gen. meeting of the English and Foreign representatives of Ins. interests was held at the rooms of the Inst. of Act. (5 July), to which Mr. Brown presented a paper: *On the Collections of Data in various branches of Ins.*, of which we shall speak more at large under FIRES AND FIRE INS., STATISTICS OF.

Mr. J. H. James pub.: *A Treatise on Life and Fire Assu.; Annu. and Rev. Payments: illustrated by Life T. deduced from the Rep. of the Reg.-Gen.; Prems. for Fire Ins.; and Official Forms.* There was nothing new on the subject of F. Ins.

Towards the close of this year, a somewhat remarkable correspondence arose between Mr. Charles B. Ford, of the *Sun* Fire, and Mr. Herbert Spring, of the *Manchester*, which will be noticed more in detail under FIRE INS. PREMS.

The gross sum insured against fire in the U.K. this year was found from the duty returns, etc., to be £852,000,000. This included farming stock.

At this date (1851) in *Germany* there were 20 Fire Ins. Cos. of the proprietary class, and 13 mutuals. Of the latter only 3 extended their operations throughout the country and insured movable and immovable property; 8 insured only movable agricultural property; and 2 only buildings. The risks in force by the proprietary cos. were estimated at £286,000,000. The mutuals carried risks of about 100 millions sterling—making the total sum insured £386,000,000. The profits to the shareholders of the proprietary cos. varied from 20 p.c. downwards.

1852.—Mr. Wm. Edwards, of Ledbury, pub.: *Hints on Fire Ins.* It was precisely what it purported to be—a small pamph. containing a few useful hints to provincial F. agents.

Sig. S. Alesandro Daninos, Sec. Gen. of the *Riunione Adriatica di Sicurtà in Trieste*, contributed to the *Assu. Mag.* an account of the Ins. Cos. of Austria, from which we have already quoted under title AUSTRIA.

On the 13th Dec. this year a meeting of the managers of the leading F. Ins. Cos. of *Germany* was held at Leipzig, in view of forming an Asso. of the German Assu. Cos. for the purpose of common deliberation and co-operation. It will be more convenient to give the details of the organization under GERMANY, sub-heading *Fire.*

1853.—The number of new Ins. Offices making F. Ins. bus. one of their objects founded during this and the several preceding years at last attracted the attention of the newspaper press, and the *Leeds Mercury* of 30 July contained the following:

> Among the means now suggested for the investment of spare capital, a number of new Fire Ins. Cos. have been projected; an active canvass being carried on in Leeds and other places to get the capitals subs. It is represented to those who are solicited, that the payment of a small deposit is sufficient to secure a considerable return of profit. To support this, it is stated that fire ins. cos. have generally, if not invariably, made large profits, and the advanced price of the shares of some cos. is quoted in proof. It may be well to test this statement by reference to the statistics of the subject, which are obtained from the ann. return of duty paid to Gov. on fire ins., and from other available sources of information.
>
> In the first place, we may state *that no fewer than 58 offices have been compelled by ill success to discontinue fire ins. bus. within the last 25 years;* and yet, during the same period, a number of new offices were projected, of which many never succeeded in getting organized so as to transact bus.; but 27 of those which did succeed are still carrying it on. Of these 27, seven only are transacting a tolerable amount of bus.; 3 or 4 of them yielding a good but not extravagant profit; the remaining 20 collect altogether £14,015 of fire ins. duty in the year, being, for the whole 20 offices, less than one-fourth part of the duty collected and paid to Gov. by even one single old co. That is, it would take no less than 80 such offices to transact an amount of bus. equal to that of the office alluded to. Persons practically acquainted with fire ins. state the minimum amount of bus. on which a co. can rely with any confidence to meet its expenses and yield a profit for a series of years, at from 7 to 10 millions of ins., yielding £10,000 to £15,000 of duty. But here are 20 offices averaging little more than £2000 p.a. each. The above data are from the return for the year 1851, that for 1852 not being yet published; but as some add. offices have commenced within that term, no doubt the bus. is still further subdivided.
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> It appears, therefore, that in 25 years past 58 offices have found fire ins. a losing bus., some ruinously so, having had to make heavy calls on the shareholders to meet the claims for losses; that of 27 new cos. projected to supply their places, 7 only transact an amount of bus. from which it is reasonable to expect continuous profit; that of these 7, three only yield a dividend that compensates the shareholders; the stock of the other 4 being at a discount. The offices at present engaged in the bus. are 62 in number, of which (as nearly as can be ascertained) 35 yield a profit that keeps their stock at a prem., these being, with about 3 exceptions, long-estab. cos.; and 27 show a different result, their stock being below par: these latter cos. having been, with about a similar number of exceptions, recently estab. The average profit of all the cos. cannot be ascertained with certainty; but if the losses of the ruined cos. were deducted from the net profits of the existing cos., it would, no doubt, be found that Fire Ins. bus., on the whole, is far from yielding a high average rate of profit.

The Fire Offices which discontinued bus. this year were the *Halifax*, *Bradford and Keighley*; *National Mercantile*; and *Star*.

Mr. Richard Atkins, of the *Sun* Fire Office, contributed to the *Assu. Mag.* [vol. iii. p. 147] a paper (the first of a series): *On the Settlement of Losses by Fire under Average Pol.* This we shall review under FIRE INS. PRACTICE.

Mr. J. H. Hartnoll, Ed. of the *Post Mag.*, commenced a new pub. "to be devoted entirely to the interests of Fire Ins."—the *Ins. Monitor*, the first number of which bears date Oct. 1, 1853. Two numbers only appeared; and these were full of interest; but the editor had already too many engagements on hand to enable him to sustain an add. publication. Out of this pub. arose in a great degree, if not entirely, the action of *Hartnoll* v. *Durham* [Chairman of Unity Fire], tried at Maidstone in the spring of 1854.

1854.—Many vague statements were from time to time made regarding the influence of the F. Ins. Duty in retarding the progress of the business. An art. in vol. iv. of *Assu. Mag.* pub. this year entitled: *The Stamp Duties on Contracts of Assu.*, furnished trustworthy statistics upon the subject, which we put on record in a condensed form for historical purposes.

The tenant of a house of £50 p.a., holding on lease, prob. insures for £500 on the building and £500 on the contents. The duty is 30*s.*, or a little beyond the amount of property-tax chargeable for the house. A wholesale dealer at the rent of £200 a year will prob. have £10,000 worth of stock. The duty of £15 a year makes a permanent tax of 1*s.* 6*d.* in the £, in addition to his rent. The importing merchant, no less than the smaller dealer, feels the effect of duty on his general charges. For example: the warehouse rent for £10,000 of raw silk would probably be £16 5*s.* The ins. duty adds directly £7 10*s.* to the charge of rent.

The extent to which the bus. of ins. cos. is restricted can scarcely be estimated. Large properties and estates are frequently left wholly uninsured : the owners, who would willingly pay the moderate prem. required, revolting altogether at the 200 p.c. add. of duty. Large bulks of merchandize are kept uncovered for the same reason. But a still greater drawback for the cos. is that, among their own insurers, the amounts are so cut down and reduced to meet the duty charge, that the sums insured bear no fair ratio or proportion to the value of the property covered. The great majority of the claims are made for partial losses, or for sums short of the sums covered ; and not being settled upon the *pro ratâ*, or average principle, the adverse operation of this general system of under-ins. upon the interests of the cos. does not stand in need of further explanation. An under-ins. of any risk is, as far as their interests are concerned, a virtual reduction of the rate of premium paid.

Only the most general statements can be made as to the facts. A short time since an account was taken in Lond. for one whole year, of the proportion of uninsured properties that were destroyed or damaged by fire. The following were the results : *Insured*, buildings 914, contents 609—total, 1523. *Uninsured*, buildings, 197, contents, 404—total, 601. Unknown, 12 ; total observed upon, 2136. So that in Lond., known to be the very centre of ins. bus., no less than *four-tenths* of all the movable property was left uncovered ; and prob. where ins. existed, it was not for more than 50 p.c. of insurable value.

Estimates had been made, taken from the valuation for the police-rate, and other general assessments, *showing that not one-half of the value of the property in the metropolis and suburbs were insured ;* and "it is an undisputed fact that in no part of the country is the habit of ins. so general as in those districts."

In the *Quarterly Review* for Dec. this year there was an art. reviewing many of the incidents associated with Fire Ins.; this we shall notice more in detail under FIRE PROTECTION, and some other heads.

Mr. Joseph K. Angell, "Counseller-at-Law," pub. at Boston, U.S., this year, *A Treatise on the Law of Fire and Life Ins., with an Appendix containing Forms, Tables, etc.* This was, we believe, the first treatise of this class which had been pub. in the U.S. The author says in his preface :

> At no former period in the hist. of civilization has the law of ins. assumed the importance, or awakened the interest, which belongs to it at the present time, in nearly every part of the civilized world. *Especially is this the fact in the U.S.: for here not only is the practice of ins. in all its varieties already very general, but it is rapidly extending to all classes of society, and is receiving the countenance and sanction of Gov.* The author, therefore, deems no apology necessary for selecting Fire and Life Ins. as the subject of the following treatise, however much he may crave the indulgence of the reader for the manner in which he has discussed it.

No apology *was* necessary from this author, who produced a most instructive book.

1855.—Mr. Hyde Clarke pub.: *Statistics of Fire Ins. in* 1853 *and* 1854. This was the reprint of an art. from the *Land and Building News*. It will be noticed more especially under FIRES AND FIRE INS., STATISTICS OF ; but the following para., which contain some new propositions in view of the removal of the "Duty," fall to be noticed here. The writer says :

> On this head I have for many years submitted propositions to the Gov., with a view of preserving the revenue and yet alleviating the burthen on the taxpayer. It is to be observed that in *Norway* some *Swiss Cantons*, and in some *German States*, assu. against fire is a compulsory obligation, and constitutes a State tax : every householder being obliged to contribute to the common fund ; and in case of loss receiving compensation from it. This is found to work well, and could be as well administered here. There is, however, at this moment the obstacle of vested interests to contend with ; but it is quite practicable to afford considerable relief.
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> Assu. against fire, or at any rate the payment of 3*s*. p.c., *should be made obligatory on all owners of houses and buildings ; and in a certain proportion to the value of the building, for the furniture and trade stock.* This would increase the taxable area ; and by limiting the total of the duty in each year to £1,300,000, the duty on pol. would be gradually reduced from 3*s*. p.c. to 2*s*. 6*d*., to 2*s*., to 1*s*. 6*d*., and in time to 1*s*., and perhaps lower, without loss to the Gov. By making the payment of the duty obligatory, persons now unassured would be induced to assure, and this would increase the bus. of the present offices ; or a Gov. department might be constituted to engage with them in the bus. *The duty on F. assu. is strictly a property tax, and it ought to be borne fairly and equally.*
>
> If the F. assu. cos. agitated for a compulsory tax instead of for the abolition of the tax, *they would obtain an enormous increase of bus.*, and avoid the chance of some speculative administrator constituting a new department with great patronage. A man of administrative capacity may seize hold of such an opportunity, and in time the assu. cos. would be driven from the field. If the assu. cos. cannot get a compulsory duty, they should at all events agitate for a fixed amount of duty, which by the progress of Fire Ins. would in time obtain an alienation.

We quote these suggestions and opinions historically ; certainly not by way of confirmation or approval. We had always considered that if any tax were levied in connexion with Fire Ins., it should be *on property not insured!* [FIRE INS., MUNICIPAL AND STATE.]

The Fire Ins. Offices in *France* had at the close of the present year risks on their books to the extent of £1,720,000,000. The average prem. was found to be 2 fs. (1*s*. 8*d*.) for each £100 insured, over all risks. In *England* at the same date the value of the property insured was estimated at £864,859,976 ; and the average prem. was computed to be 4*s*. p. £100.

1856.—The question of the duty on Fire Ins., which as we have seen had at different periods assumed different phases, assumed altogether a new and orig. one this year—in the shape of an attempt at its evasion altogether, by ins. in foreign cos., which were not burthened with any such impost. The first step in this direction was the estab. early in the year of an agency in Lond. of the French Fire Office *La France*, which undertook F. Ins. without the payment of any per centage duty, and we believe without any stamp duty on the pol. The pol. being prepared at the head office of the Co., and merely delivered from the agency in Lond. It seemed certain, having reference to the 10 Anne, c. 26 (1711), by which no unstamped pol. could be put in evidence in law proceedings in the British Courts, that these pol. could not constitute an entirely valid security; while the 22 Geo. III. c. 48 (1782), which required a licence from the Commissioners of Stamps for all persons carrying on the bus. of F. Ins. in Gt. Brit., presented another difficulty. But the attempt was made, and attracted a good deal of attention at the time. The Co. was said to have been fortified with legal advice from high authority that there was no prohibition; and there certainly was none in any of the then numerous Acts bearing upon the subject of F. Ins. It was certain that if one office could estab. itself here, others would soon follow; and hence the Brit. Offices became active in the matter, and the result was legislative interference.

The Act 19 & 20 Vict. c. 22—*An Act to amend the Laws relating to the Duty on F. Ins.*—recites: "And whereas a practice has been estab. of ins. from loss by fire property situate within the U. K. by foreign cos., or by pol. or ins. made abroad, and it is expedient that all such ins. should be subject to the same duties as the like ins. made by cos. within the U. K. are now chargeable with"; and then enacts:

1. The said respective duties by the said Acts granted as aforesaid shall extend and be payable and paid for and in respect of every ins. of property situate within the U.K. for loss or damage by fire, whether the same shall be made by any co., or person or persons, within or out of the U. K., and whether the pol. or other instrument, note or memorandum of or relating to any such ins. shall be made, signed or issued in the U. K., or elsewhere, and whether there shall be any such pol., instrument, note, or memorandum, or not.

Under sec. 2 the "person insured" was made chargeable with the per-centage duty, where the ins. was made by unlicensed foreign cos. By sec. 3, agents receiving proposals for ins. by cos. out of the U. K. to be deemed to be persons keeping an office for ins. against loss by fire, and were therefore required to take out a licence; penalty for neglect £100. By sec. 4, persons keeping ins. offices for foreign cos. to be chargeable with the duty. By sec. 5, a proviso that this Act should not [illegible] operations of former Acts as to duty. Finally, sec. 6 [illegible] of Fire risks relieved from per-centage duty.

There was printed this year by order of Parl. a [illegible] *on Fire Ins. Duties, by George Coode* [illegible] *Esq., M.P., Chancellor of* [illegible] 20 [illegible] 1856 [illegible] *H.M.* [illegible] It may be stated, in explanation of the appearance of this document, that the mercantile community, always [illegible], as it might well be, with the Duty on Fire Ins., became much more so [illegible] in 1833. The [illegible] Exchequer staved off the evil day [illegible] Mr. Coode was selected to investigate [illegible] the Duty. He [illegible] See 1853. [illegible]

[illegible]

1857. [illegible]

[illegible]

our views are carried into effect. We suppose no other office of the extent of our business has the details thus classified. We regard this information—our actual experience—as furnishing reliable data upon which our bus. can be conducted, with almost entire certainty, and confidence of success. Many regard the bus. of Ins. as one of *luck*, or mere chance—*and as it has been and now is generally conducted, it is so*—but no future contingency can be more confidently predicted than the reliability of our success and stability, if we will but act in the future on the facts of past experience.

The following para. present points for reflection :

> All reasonable men are willing to pay prems. for the ins. of their property against loss by fire, that will be sufficient to meet the losses, and yield the underwriter a fair return for the labour devoted and the cap. employed and exposed. For those unwilling to pay a responsible co. there are plenty of cos. without any cap., or any that is available, and destitute of experience, who will gladly take risks at half or partial rates, and when claims for losses occur, they will pay if they can, which they generally cannot; and some of them will not, if they can avoid it. The question with cautious men will be, *what is it worth* to ins. my property? With our means of answering this inquiry, we think they will be satisfied, and be willing to pay a *fair price for a good thing*. The alarming increase of fires, in number and extent, urge on us the great importance of obtaining adequate rates, and add. care in the ins. of property. . . . .
>
> Every pol. you issue imposes an obligation on us to be prepared to respond to its full amount within 60 days, should it result in a loss. How important, then, that it should be issued with care and judgment, and a proper consideration had for the hazard! With the same attention then to our interests which a discreet agent would exercise in his own individual transactions, in order to a successful result, we may expect the reasonable reward which we deserve for our liabilities.

1858.—The leading British Ins. Offices combined this year—after repeated attempts in the same direction—in view of regulating rates, etc.; and became what is now known as the Tariff Asso., or the Asso. of Brit. Fire Offices. Its services have been very considerable not only to the offices, but to the public: for uniformity of operation in a bus. of such extended ramifications as F. Ins. must be held to be of great value. [FIRE INS. OFFICE COMBINATIONS.]

1859.—Mr. Thomas Miller read before the Inst. of Act. a paper entitled : *A Chapter in F. Ins.:* "Specific" and "Average," which is printed in *Assu. Mag.* vol. viii. p. 140; and which has been referred to under title AVERAGE POL. (*Fire*). In the same year Mr. David Christie, of the *Sun* F., read before the Inst. a paper : *On the Settlement of Losses by Fire under Specific and Average Pol., Separate and Combined.* This paper has also been noticed under AVERAGE POL. (*Fire*).

An important legal enactment came into operation this year—the 22 & 23 Vict. c. 35—*An Act to further amend the law of property, and to relieve trustees*—under the provisions of which relief is in certain cases afforded against forfeiture for breach of covenant to ins. against fire—see COVENANT TO INSURE. (See 1860.)

In the 4th Rep. of the Ins. Commissioners of Massachusetts (Messrs. Elizur Wright and Geo. W. Sargent), based upon the returns of this year, these gentlemen have considered whether it be possible "to discover any traces of a law in regard to the occurrence of destructive fires;" and they arrive at the conclusion that no such law obtains. This question will constitute one branch of our inquiry in regard to the value of statistics of fires. [FIRES AND F. INS., STATISTICS OF.]

1860.—The 23 & 24 Vict. c. 111—*An Act for granting to H.M. certain Stamp Duties, and to amend the laws relating to Stamp Duties*—was passed. Sec. 8 was aimed at certain evasions of the per-centage duty, which were endeavoured to be remedied in several ways: (1) the renewal receipt was held to be chargeable with the duty ; (2) persons receiving a prem., and not taking out a duly stamped pol. within one month ; (3) or on renewal, failing to give properly stamped renewal receipt ; (4) or giving unstamped receipt, to be liable to penalty of £20 : and in case of a co., the man. director or sec. to be liable. Under sec. 9, *adhesive* stamps, as well as impressed stamps, or both, might be used on ins. pol. By sec. 11, Ins. on *Workmen's Tools* up to £20 were to be exempt from per-centage duty or stamps, provided such ins. were made by a separate pol., or by a distinct sum insured on same.

The Act of last session in regard to waiving forfeiture for non-ins. was amended this year by 23 & 24 Vict. c. 126.

The ann. per-centage duty on F. Ins. in E. and W. for the financial year ending 5 Jan. 1861, was £1,375,798; in *Scotland*, £106,250; in *Ireland*, £76,744; total, £1,558,792. The rate remained at 3*s.*; re-insurances were exempted from duty from 1856; but in practice they had never paid any. Workmen's tools up to £20 were exempted from duty by enactment this year, and could not have affected the returns. The value of insured property in E. and W. was estimated at £983,161,773, including £65,963,073 value of agricultural ins. exempted from duty.

The detailed returns of the duty paid by the several offices show many changes. First, whereas there were 32 Town Offices included in the list in the previous decennium, there are now but 25, several of which are new. The *Town* Offices which had passed out of existence were the *Monarch*, *Legal and Commercial*, *Defender*, *Star*, *National Mercantile*, *Brit. Empire* Mut., *British Anchor*, *Equitable*, *National Guardian*, *Times*, *English and Cambrian*, *British Provident*, *Cambrian Universal*. Of the *Country* Offices there had passed away the *Newcastle-upon-Tyne*, the *Halifax, Bradford and Keightley*, the *North of England*, *Essex Economic*, *Kent* Mut., and the *Brighton and Sussex*. Of the *Scotch* Offices there had passed away the *Forfarshire and Perth*; and no new one had been created. In *Ireland* there was no change in the native offices.

The *new Offices* of the decennium were:

1851 Brewers and Distillers
,, Lincolnshire
,, Sceptre
,, Times
1852 Absolute Security
,, Adamant
,, Athenæum
,, Counties Union
,, English and Foreign
,, Era
,, Lancashire
,, National Provincial
1852 Protestant
,, Provincial (Welsh)
,, Sceptre of Eng.
,, Unity
1853 Beacon
,, Eclipse
,, Gen. Indemnity
,, Realm
,, Self-Reliance
1854 Durham & Northumberland
,, Law Union
1854 Lond. Mercantile
,, State
,, United Brothers
1855 Emperor
,, Hull and Lond.
,, Saxon
,, United Friendly Brothers
1856 Bank of Lond.
1857 Queen
1858-60 None

1861.—This is an important year in the hist. of Fire Ins. On the 22nd June the fire at Cotton's Wharf, Tooley Street, commenced; and the losses resulting to the British Offices were enormous. It was indeed by far the most serious fire they had ever experienced. The destruction of merchandize ran into millions sterling. Poor Braidwood, the then chief of the Lond. F. Engine Estab., discovered, at an early period, the serious character of the outbreak; and lost his life in his efforts to prevent its extension. But the details of the catastrophe will be given under FIRES, GREAT; it is with the results which flowed from it that we here propose to deal. The managers of the offices, panic-stricken, made enormous add. to the rates of prem. for mercantile risks [FIRE INS. PREMS.]; and attempted to enforce conditions regarding classifications of goods, and construction of wharfingers' warehouses internally and externally, which were regarded, in many cases, as impossible of accomplishment. [FIRE PROTECTION.] Results, such as might have been foreseen in calmer moments, followed.

In July a requisition, signed by several hundred of the leading merchants of Lond., was addressed to the Lord Mayor (Cubitt), of which, omitting the names, the following is a copy:

> We, the undersigned merchants and others trading in Lond., respectfully request your Lordship to convene a public meeting to take into consideration the largely increased rates of prem. demanded by the public Fire Ins. Offices, in consequence of the recent calamitous fire in Southwark; and we beg to submit to your Lordship the following brief explanation of the cause of soliciting your Lordship's compliance with our requisition:
>
> *The principal offices have for a long series of years received an extent of prem. from the ins. of merchandize, and depôts thereof, which we believe to have been instrumental in promoting the increase in the value of their property to a very considerable extent, after payment* [of] *all claims to which losses by fire have subjected them.*
>
> The recent fire in Southwark was of an extent never equalled in the metropolis since the foundation of the Ins. Offices, and consequently of an exceptional character. The offices nevertheless have, in their panic occasioned by so serious a loss, endeavoured to estab. a tariff of prems. which, if submitted to, would render to them far more than an equivalent to their risk—in fact, would convert an extraordinary calamity into the basis of a permanent source of excessive profit. To exact the high rates now proposed by the offices, who by combination exercise a practical monopoly, against which at present the mercantile community is powerless, would be to encourage non-ins., and thus to stimulate an improvident habit of trading, the evils attending which could hardly be exaggerated, and which we earnestly deprecate.

Then follows the list of about 300 names of firms who had signed. The Lord Mayor, in pursuance thereof, convened a meeting at the Mansion House for the 25th July.

At this meeting Mr. Crawford, M.P. for the City, occupied the chair, in the unavoidable absence of the Lord Mayor. He opened the proceedings with great fairness; but it soon became obvious that the formation of new Fire Offices was a foregone conclusion with many of those present. Mr. W. Newmarch, then Secretary of the *Globe*, stated the case on behalf of the offices. He said the Ins. bus. was conducted on the principle of dividing the various risks into certain large groups. The mercantile risk of Lond. was one group; the manufacturing risk of Lancashire and other parts of the country was another group; and there were many other groups. Now, what the rate of prem. ought to be for any of these groups was a matter of simple calculation. Taking, say, 10 years as a given period, it was found that the offices would receive a certain amount of gross prem.; out of that they would have to pay certain expenses, leaving a net result, out of which they would have to pay losses. During the last ten years the mercantile ins. of Lond., taken as a whole, had been unprofitable. The late fire had inflicted a loss of one million sterling. Combining these two facts, the meeting must admit that a case was constituted, which justified the offices in making some add. to their previous rates. Then came the question—to what extent should that add. be made? The experience of the great fire of 22nd June had shown the offices that large claims had arisen from the indiscriminate storing of commodities; and that the fire was greatly aggravated in its character and results in consequence of the imperfect division of warehouses. The offices proposed to form their new tariff upon those two principles. In making alterations in their existing tariff, they sought to improve the character of the risks by obtaining a better classification of goods; and to reduce to some reasonable limitation the present extravagant size of the warehousee. When these improvements should be carried out, the offices proposed to make very large remissions in their prems. But even now the offices were prepared to discuss the questions at issue in a fair and amicable spirit. In the end the following resolutions were adopted:

> 1. That in the opinion of this meeting the proposed rates of merchandize and the depôts thereof, as issued by the Combined F. Offices, who virtually form a monopoly, are manifestly unjust and excessive; and would, if submitted to, be the means of converting an unparalleled calamity into the basis of a permanent source of exorbitant profit.
>
> 2. That this meeting is also of opinion that if the proposed rates of ins. be estab., an inducement would be offered to incur the hazard of non-ins. rather than submit to an exorbitant impost; and that such a temptation to imprudence would diminish the protection which the caution of the mercantile community has hitherto enabled them to secure for their property.
>
> 3. That the market value of the shares of the leading F. Offices, which has suffered no material depreciation since the fire in Southwark, proves that on the average the previous rates were amply sufficient; *and therefore this meeting pledges itself to use all lawful means, by the formation of a new Co. or otherwise, to oppose the estab. of the proposed new rates of ins.;* and that a committee be appointed to consider the best course to be pursued *towards that end.*

Such a challenge, from such a meeting, led to the projection of no less than 8 new F. Offices, viz.—taking them in alphabetical order—the *Braidwood; Britannia; City of Lond.; City and Provincial; Commercial Union; Empire; Mercantile; Public.* The *Commercial Union* and the *Mercantile* were the only 2 offices that got fairly floated; and the latter of these had but a very brief independent existence—it became merged into the *North British* during the following year.

The offices had to modify their tariffs to meet the competition now engendered; but there can be no doubt that much good resulted, in the matter of increased safety, by the regulations imposed regarding the storage of goods. [FIRE INS., CLASSIFICATION OF GOODS IN STORE.] It was pointed out that merchants covered by *floating pol.* had no control over the buildings in which their merchandize might be stored.

It may also be recorded with satisfaction that none of the offices interested failed to meet their engagements. In the adjustment of the resulting losses, a new principle was introduced, which will be spoken of under FIRE INS. PRACTICE.

There were this year in force in Gt. Brit. and Ireland, 1,389,304 F. pol., upon which the ann. duty amounted to £1,596,330, being £1 2*s.* 3*d.* on each pol.; and implying that the pol. all round must average £740 each. The average ann. prem. and duty on each pol. would be about £3. It was found that the average duration of a fire pol. was 5 years and 8 months; so that from this view the stamp duty on the issuing of a new fire pol. was not very onerous when at 1*s.*—except that by reason of competition in the bus. it ultimately came to be paid by the ins. offices instead of by the insured.

1862.—A Select Committee of the House of Commons was appointed "to inquire into the existing state of legislation, and of any existing arrangements for the protection of life and property against fire in the metropolis." The results of the labours of that Committee have already been noticed under FIRE BRIGADES; and FIRE EXTINGUISHMENT. They will be again reviewed in some detail under FIRE PROTECTION.

During this year there was pub. in Edin. by Mr. Thomas S. Paton, Advocate, *Compendium of the Law of Ins., comprising Marine, Fire, and Life Ins.* There is nothing which calls for especial notice here.

Same year, Mr. J. V. Yatman, then of the New York branch of the *Royal* Ins. Co., pub. in N. Y.: *New York Fire Ins.; Seven Years' Average Prems., Risks, and Losses, deduced from the Fire Marshal's Reports.* He offers the following obs. on Fire Ins., which, while we cannot fully indorse, we admit afford "food for reflection":

> It need not be explained that the more numerous the risks, the less is the hazard. If all the property in the world were insured in one office, and if F. Ins. were founded on even [*sic*] as correct statistics as Life Ins., there would be but little chance of pecuniary loss. The only reason for the rejection of what are denominated special hazards is the difficulty of obtaining a sufficient number; and an office which, taking but a few, might be unfortunate, would be perfectly safe in assuming a large number.
>
> The smallness of loss, compared with the amount at risk, as shown by the above T. [we shall prob. give the T. under NEW YORK], does not lead men of comparatively small cap. to the conclusion that they might safely insure themselves; because they feel that what might be a small loss to a co. would be serious to one of them. . . .
>
> That only should be put at risk, the loss of which would not be ruinous, or better still, not inconvenient. This last is what the payers of the 2 million [dol.] p.a. to the ins. cos. of this city do. They stake a small prem. against the security of their property. If no fire occurs, they lose the prem.; if a fire does occur, they win the amount for which they are insured. The reason why the cos. can afford to give such odds is, that they are, if I may use the term, betting with a sufficiently large number to get an average.
>
> It is an obvious conclusion from this, that the larger the bus. of a co. is, and the more extended the field in which it operates, the greater will be the security which it offers. A large conflagration in this city might be ruinous to a co. which had confined its bus. to the district in which the fire occurred; while another co., which had taken a larger field, might lose an equal amount with no damaging effect to its security and prosperity.
>
> The amount of insurable property in the world not being unlimited, it follows in theory that *the fewer cos. there are the lower might be the prems.* And on the contrary, that the more cos. there are the higher the prems. would have to be, because, whatever the description of goods, it would be specially hazardous for any co. to take but one risk. Almost no prem. [*sic*] would be equitable in that case: but the same property might be insured for a trifle, if the co., instead of having one, had a large number. In this city, however, the rule seems to be inverted: *the more cos. we have the more the rates are reduced.* It is understood on all hands that the present rates are much too low; and it is prob. they will not be raised to a paying standard till our dividends, instead of being reduced, are annihilated.

At the close of 1862 an estimate was made from the Fire Ins. Duty Returns of the increase of insured property during the 12 years from 1851 (both inclusive). The increase was found to be no less than 312 millions stg.; but this did not include farming stock, upon which no duty was payable. This too had increased 15 millions during the like period. The total increase was therefore 327 millions. The gross sum insured in 1862 was found to be 1200 millions stg.!

1863.—The *Revised Rep. on Fire Ins. Duties*, by Mr. George Coode, was presented to both Houses of Parl. and ordered to be printed. We have shown, under date 1856, the effect, in our view, of the publication of the first issue of this Rep. in that year. We have also, under FIRE INS., DUTY ON, stated the general drift of the argument. We shall presently see that the tax was already in its first stages of dissolution.

Mr. Arthur C. Ducat, then Sec. and Chief Surveyor to the Chicago Board of Underwriters, pub. in that City: *The Practice of Fire Underwriting*. This was the first of that series of practical hand-books on Fire Underwriting which have been of such essential service to the bus. in the U.S. It is impossible to speak too highly of its merits. We propose to make the reader familiar with some of its contents under FIRE INS. PRACTICE.

1864.—The agitation in Parl. for a reduction or repeal of the Duty on F. Ins. during the several preceding years, this year bore fruit. In the session of 1863, Mr. Sheridan had carried by a considerable majority a resolution in favour of a reduction, under circumstances already set forth under FIRE INS., DUTY ON. The Chancellor of the Exchequer in his Budget now proposed a remission of one-half the duty on Ins. on *Stock-in-Trade*. An attempt was made to obtain a smaller rate of reduction over ins. generally, but without success. Finally, the Budget proposal was accepted by Parl.; and the reduction of the duty to 1*s*. 6*d*. on stock-in-trade, as defined by the Act—27 & 28 Vict. c. 18 (sec. 9 and 10)—was carried out as from the 24th June this year. (See 1869.)

In the *Companion to the Almanack* for this year appeared a very interesting art.: *Fire Ins. and its Taxation*, wherein the writer describes in popular language the three leading modes of F. Ins. practised in the U.K., viz. *Specified* Ins., *Average* Ins., and *Self* Ins., "depending on different data, and each presenting its own peculiar advantages." We purpose to follow the illustrations given:

1. When an owner of property effects a *specified* ins. (as is usually the case in the U.K., but not on the Continent), he considers which part of his property is destructible by fire, and which part is not so; he determines for himself what is the value which it is prudent to insure; and he insures for that value only. On the occurrence of a loss by fire, he is entitled to all the value destroyed up to the extreme amount which he has insured; but if he has erred in judgment, if property is destroyed which he did *not* think destructible, or did *not* choose to insure, he obtains no payment from the fire office for such extra portion.

2. The ins. by *average*, on the contrary, does not allow the insurer to distinguish between destructible and indestructible. Whatever sum he insures is to apply to both varieties. In case of a loss by fire, he is only entitled to be paid a sum which bears such a proportion to the whole loss as the sum insured bears to the total value of the property. [AVERAGE POL. (*Fire*).] If he insures to the whole value, destructible and indestructible, he can recover from the Co. the whole loss; if he insures to half the value, he can recover only half the loss, and so on. The indestructible as well as the destructible portions of the property are included in the same pol.; and therefore the prem. p.c. charged for the ins. is low. Many officers of ins. cos. believe that average ins. is better than specified, because it gives both parties—the insurers and the insured—a fair chance of dealing with the least as well as the most destructible portions of the property; because, by constituting the owner a partner in the risk, it makes him interested in saving the insured property when in danger from fire, and so converts the owners themselves into an excellent police. The system of average ins. has been wonderfully successful in *France*.

Apart from any speculations, however, as to the relative advantages of specified and average ins., it may be mentioned that the latter—or *floating* ins. as they are sometimes called—are supposed to have had their origin in the peculiar circumstances of merchants holding stocks of goods which are rapidly being bought and sold, warehoused and moved, and therefore not susceptible of being specifically insured for any great length of time. Such a merchant having goods in different warehouses, and on different quays, and these goods constantly changing, makes an average ins., which may cover either the whole or any portion of any loss by fire which he may incur, according to the amount of prem. which he chooses to pay. Practically the *salvage* from property so insured is divided between the insurer and the insured in the same ratio as the loss is borne; whereas in specified ins., to which English householders and lodgers are most accustomed, the salvage belongs to the ins. co. All Marine Ins. are effected on the average plan.

3. *Self-ins.* differs from each of the preceding. When an owner possesses a large number of insurable articles of one kind, isolated from each other so far as concerns danger from fire, it is not regarded as worth his while to insure such articles in any ins. office. He establishes a separate ins. fund in his own books, out of which he pays for any losses that may occur. He is then sure that his actual payments will not exceed his actual losses. Self-ins. is far less applicable to Fire Ins., where the prem. on such risks as an owner would care to stand upon is remarkably low, than to Marine Ins. where the

prem. is usually considerable. Those who have tried to apply it to Fire Ins. have not usually been satisfied with the results.

This year was a marked one in the history of Fire Ins.: the following offices transferred their businesses: *Globe* (founded 1803); *Hants, Sussex and Dorset* (1803); *Leeds and Yorkshire* (1824); *Mercantile Union* (1863); *Sheffield Fire* (1808); *Alexandra Fire* (1863). Several new cos. commenced operations: these will be noticed in our decennial summary.

1865.—By the 28 & 29 Vict. c. 30—*An Act to grant certain Duties of Customs and Inland Revenue*—the stamp duty on F. pol. was reduced to 1*d.*; deposit receipts on new ins. were likewise chargeable with 1*d.* stamp duty; while the *per-centage* duty on all F. Ins. was reduced to 1*s.* 6*d.* p. £100 insured.

Mr. Edwin Chadwick, C.B., in his address on *Economy and Trade*, before the Social Science Congress held at Sheffield this year, made reference to some points in regard to Fire Ins. which are worthy of being reproduced:

> The unguarded extension of the practice of ins., instead of being an extension of the means of security, really involves the extension of danger, and an extension of the practice of incendiarism. . . . The measures I suggest for consideration as preventive, are, first—discouragement, as in the case of shipping, of full ins.: or such of the amounts insured as will prevent the entire exoneration of the parties from due care. Next, as in the case of the loss of ships, *every loss of a house or conflagration should be treated as, primâ faciæ, a default occasioning the loss of property or the loss of life, or endangering it, or endangering the public safety, and should be the subject of a competent and independent judicial examination.* Thirdly, in all these cases, public prosecution should be provided against proved defaults. It is an opprobrium upon our whole system, to leave the prosecution of the public interests to be charged upon traders, who have already been subjected to the loss of money, time, and to annoyance.
>
> These provisions could not fail to lead to the adoption of mechanical appliances, such as the great one to which I have adverted, of a constant supply of water at high pressure; *for which purpose, however, it is requisite, that water should be supplied, not as a trading monopoly, for a profit, but as a responsible service to the public, at the mere cost of the service.* Warehouses, as explained by Mr. Braidwood, in his evidence, are constructed with little regard to the prevention of the spread of fire. He fell, poor man, in his efforts to prevent the destruction of an immense building of the sort of which he had, in his evidence, when I examined him, given forewarning. Houses in towns are constructed as if to burn, and prepare for the suttees which regularly occur in Lond.; with stair-cases—instead of tile, or stone, or brick—made of wood, so as to lead the fire upwards, to burn those for whom no escape has been provided. Some recent model dwellings have gone far to prove that incombustible constructions may be provided even more cheaply than combustible constructions. But, as I showed in my address at York, it is rare that any improvement is made, or extensively adopted, except under a pressure of distress or necessity. In respect to the construction of warehouses, we had distinct evidence, which I believe is applicable to the construction of blocks of dwelling-houses, *that the present unguarded practice of Fire Ins. operates to the reduction of the salutary pressure for amendment, and the feeling of the necessity of preventive constructions.* . . .

Some of these points are considered by us under titles: FIRE INQUESTS; FIRE PROOF BUILDINGS; FIRE PROTECTION; etc.

This was the last year of the operations of the Lond. Fire Engine Estab., which had for a generation carried on its beneficial operations (since 1833). The duty of protecting the metropolis from fire devolved from 1 Jan. 1866, upon the Metropolitan Board of Works. The change was simply one of gov., not of organization or detail. The same efficient staff continued to perform the same important duties. Captain Shaw, the able chief, prepared for the Committee, as a graceful memorial of its labours, *Records of the late Lond. Fire Engine Estab.* The vol. containing these was not made public until 1870. We shall deal with its contents at large under FIRES AND FIRE INS., STATISTICS OF.

Mr. Charles C. Bonney pub. in Chicago: *A Summary of the Law of Marine, Fire, and Life Ins., with Practical Forms, Modern Cases, and Computing Rules; designed for the Guidance of Ins. Cos. and the Convenience of the Legal Profession.* This is a most excellent treatise, and should be in the possession of every ins. agent who desires to know the legal bearings of the contracts which he negociates—and what agent does not?

1866.—Mr. Richard Atkins, of the *Sun* Fire, repub. the papers he had contributed to the *Assu. Mag.* in the form of a small vol. designated: *The Average Clause: Hints on the Settlement of Claims for Losses by Fire under Mercantile Policies.* This will be noticed under FIRE INS. PRACTICE.

Same year Mr. C. F. T. Young, C.E., pub.: *Fires, Fire Engines, and Fire Brigades*, etc., which we have quoted under FIRE BRIGADES; FIRE EXTINGUISHMENT; etc.

Two important events as affecting F. Ins. in the metropolis were inaugurated with this year. 1. The taking over by the Metropolitan Board of Works of the staff and duties of the Lond. Fire Engine Estab. 2. The formation of the *London Salvage Corps*, by a number of the Fire Offices transacting bus. in the metropolis.

An important step in the Hist. of F. Ins. was taken this year (1866) in the U.S., by the estab. of the NATIONAL BOARD OF FIRE UNDERWRITERS. "It was called into existence (says the *Ins. Times* of N.Y.) as an organization for self-preservation against the effects of the ruinous competition, which for more than 5 years had disgraced the name of underwriting; brought ruin upon many cos. having at one time fair prospects, and impaired seriously the capitals of some 40 or more of the cos. in this State [N. Y.] alone. The necessity for an organization of this kind had long been felt, and steps had been taken for its formation before the great fire at Portland gave emphasis to that necessity, and cemented the union which redeemed the bus. from the impending crisis, and secured the excellent results of 1868 and 1869." It must not be supposed that the new organization became an immediate success; the opposite is rather the fact. The fires of Chicago and Boston proclaimed its necessity, and imparted the stimulus of disaster; always so much more potent than the mere promptings towards success. We think we may now say the National Board may be regarded as a national necessity. (See 1868.)

Mr. C. C. Hine, Ed. of *Ins. Monitor* of N.Y., pub.: *Fire Ins.: A Book of Forms, containing Forms of Pol., Endorsements, Certificates, and other valuable matter for the use of Agents and others.* A very practical little work, well suited to the U.S., where it forms part of the duty of agents to issue, indorse, or alter, fire pol.

1867.—Another Select Committee of the House of Commons was appointed "to inquire into the existing legislative provision for the protection of life and property against fires in the U.K., and as to the best means to be adopted for ascertaining the causes and preventing the frequency of fires." The evidence taken by this Committee was of a very important character, and will be dealt with at large under FIRE PROTECTION. Some of the evidence has been noticed under FIRE INQUESTS.

This year Mr. C. J. Bunyon, M.A., pub.: *The Law of Fire Ins.* This is a far more comprehensive treatise on the subject than any that had previously appeared in this country, and was much required. The bus. of F. Ins., as we have seen in the course of this hist., has grown into vast proportions, representing and protecting enormous interests; and in the nature of things misunderstandings have arisen alike on questions of interpretation, as on others of insurable interest, reinstatement, etc., etc., requiring recourse to the Courts of Law or Equity. Some of the points which have arisen have already been noticed under F. INS., CONDITIONS OF; F. INS., CONTRACT OF; and other heads. The best evidence of the value of Mr. Bunyon's work lies in the fact that a new ed. has since been called for. [FIRE INS., LAW OF.]

There was pub. this year in N.Y.: *First Report of National Board of Fire Underwriters.* This document (as also the subsequent reports of the same body) is full of interest and instruction; but a detailed notice of it must be reserved for our hist. of F. Ins. in the U.S. [UNITED STATES, FIRE INS. IN.]

1868.—This is the last year for which we have complete returns of the ann. percentage duty on Fire Ins. The amount returned in E. and W. was £921,486; in *Scotland*, £99,222; in *Ireland*, £51,923; total, £1,072,631. But to account for these diminished figures, it must be stated that while Ins. on Stock-in-Trade had been reduced to 1*s.* 6*d.* per £100 in 1864, in 1866 the rate on all ins. had been decreased to that amount, or one-half the former rate. The value of insured property in E. and W. was estimated to have increased to £1,504,164,000; this was including £75,419,303 value of agricultural ins. exempted. The detailed returns of the duty collected have already been given under FIRE INS., DUTY ON.

Mr. J. H. James pub. "a new and enlarged" ed. of *A Practical Treatise on Life and Fire Ins.*, etc. First ed. 1851.

The Rep. of the Executive Committee of the National Board of Fire Underwriters, presented to the general body by Mr. D. A. Heald, 18 Feb. 1868, contained the following passages, which we regard as of such general interest that we give them a place here:

> The purposes of this organization have been so often misapprehended by those partially informed of its objects, or so grossly misrepresented by those whose selfish interests were affected by its operations, that your Committee feel called upon to set forth anew the motives which govern you in seeking the aid of an association like that of the N. Board. It is a well-known fact that for years before its organization, the bus. of fire ins. was conducted with only such system, uniformity, experience or skill, as the isolated and necessarily limited administration of individual cos. might have developed. There was little or no interchange of views among underwriters, little or no fellowship; and an absolute repugnance to a union of experience for the guidance of the common bus. So far from anything like a system of statistical information being carried out under existing circumstances, there was an effort to prevent an aggregation of the great mass of facts, so important when combined, yet so valueless when isolated and locked in the experience of individuals, The business is essentially one of average, and that co. has been most successful which has most closely studied this first principle of our bus.
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> The bus. of even our largest cos. is scarcely large enough to furnish a safe and reliable average—in fact, until within a few years, fire ins. has not had even a general statement of results in the necessarily imperfect form of official reports. These rep. have been of great service, imperfect and unpractical as they are; but they have, and will, ever fail to afford that aggregation of practical experience and skill so essential to the development of the great average which is the fundamental basis of the business. No man can safely underwrite a single risk, while he may write a thousand with a profit at a rate based on the average loss on a thousand risks of like character; neither can he fix an adequate rate of prem. to a single risk, while he may, in the light of experience, fix a proper rate to a thousand. The law of average prevails to a wonderful degree in many departments, subject to the wildest caprices of chance in its individual members. Nothing but the winds and the waves can be more capricious and uncertain than human life in the individual man; yet life itself, in the aggregate, presents an average as certain as the simplest proposition in mathematics. The average life of a thousand men presents a mathematical certainty, and a thousand risks on property, subject only to *accidental* destruction by fire, should present an equal certainty for calculating the prem. The object of this organization is to bring face to face the practical underwriters of the country, with all their individual experience, and combine the same into a certain and reliable basis for the future conduct of the business. *Whatever actual knowledge of this law may have been obtained by the older and more studious observers, has either been kept as a precious secret, never to be divulged, or has died with its possessor, and gone down to oblivion with the lost arts of other days. In fact little or no reliable data or results of former years have been collected or preserved for our benefit or*

> *guidance.* We can hardly estimate the value of a system of classification and statistics, of a dozen of our largest cos. for the past 15 or 20 years. It is one of the objects of this Board to gather, in permanent form, everything that can be of value in determining the actual cost of F. Ins. in this country; and, it is believed, that an encouraging advance has been made in the past year, during which time we have circulated, from our office, over 45 thousand documents of various kinds, and have sent more than 4 thousand letters, all of which have tended, more or less, to the education of underwriters throughout the country. The proceedings of this Board, and its various committees, have been freely circulated, and a vast amount of practical results have been obtained therefrom. The first great object has been to awaken an interest in the bus. as one requiring skill and abilities of the first order, and create in the minds of its managers a higher self-respect and regard for others, and a disinterested endeavour on the part of all to strive for the good of common interests and increased intelligence in their management.

Some other passages from this able address will be given under Fire Ins. Prems.

Mr. J. Griswold pub. in N. Y.: *Handbook of Adjustment of Loss or Damage by Fire, for the Use of Fire Underwriters.* A most valuable contribution to the practical literature of F. Ins. The author says: "No special claim to originality of ideas is made; it is rather a collection of scattered fragments of ins. wisdom, collated from a great variety of sources, freely appropriated, and brought into an aggregate form, whence the tyro in the profession can gather the fruits, divested of technicalities."

1869.—This year saw the end of the vicious system of per-centage duty on Fire Ins., with all its restrictions and vexations, as set forth in the numerous Acts of Parl. we have already passed in review. The circumstances attending its death and burial have already been set out in our art. Fire Ins., Duty on. The imposition, having been created by Act of Parl., had to be disposed of by the same power, and accordingly in 32 & 33 Vict. c. 14—*An Act to grant certain Customs and Inland Revenue, and to repeal and alter other Duties of Customs and Inland Revenue*—may be seen the formal obsequies attending its departure. We look with pity towards *France*, where financial necessities have driven its ministers to seek a revenue by the adoption of a tax in any form upon fire, or indeed any other branch of, ins.

The "prophet" Zadkiel in his almanack for this year predicted among other evils to occur in the month of November, "very numerous and serious fires will tell hard upon the ins. offices." This, like a great many other prophecies, happily failed of realization.

1870.—The leading incident in the hist. of Fire Ins. this year carries us back to the origin of F. underwriting in the U.K. A plan was set on foot in Manchester by which individuals were to underwrite F. risks, much as Marine Ins. pol. are still underwritten at Lloyds; and as F. Ins. *may have been conducted* for a few years after the F. of Lond. 1666. There is, however, this differing feature in the modern scheme, viz. that the pol. are underwritten by one man, holding a power from all the underwriters standing upon the risk: thus £3000 written by him would prob. mean £100 for 30 different individuals. The parties have adopted a legal organization, known as the *Mutual Fire*, under which title we shall furnish complete details.

The Life Assu. Cos. Act, 1870—the 33 & 34 Vict. c. 61—affected only a certain class of F. Offices, namely, those that carry on Fire bus. in conjunction with Life. Such cos.—of which there were then 31—were required, from their Life bus. point of view, to make a separate return of their "other" branches of bus., showing the amount of funds applicable to each branch at the beginning and the end of each financial year; the prems., int., and other items received; and the claims, commission, and other expenditure actually incurred. In this manner certain important returns are obtained [see 1872]. There were, however, in existence at the end of this year some 30—or nearly one-half of all the F. Offices—carrying on that bus. independently of any other; and these the Act did not reach. (See 1872.)

This year Mr. Wm. Henry Hore pub.: *Remarks on the Apportionment of Fire Losses*—a work dealing with some of the most practically important questions which arise in the settlement of claims under Fire Ins. pol. The book will be noticed in more detail under F. Ins. Practice.

The effect of war upon F. Ins. was shown in the case of *France* in 1870. The receipts of the French Cos. were 1,726,990 francs less [than the preceding year]; while the losses were 4,487,947 francs more.—*Moniteur des Assurances.*

In the U. S. a scheme was set on foot for insuring the baggage of travellers against loss or damage by fire, not only while in hotels, but also in the cars—a very useful form of protection. [Travellers' Baggage, Ins. of.]

The number of changes among the F. Offices during the decennium had been considerable. Now that the duty has been abolished, and there is no longer any need for distinction between Town and Country Offices, we shall abolish such distinction here, and speak of the English Offices generally. The Scotch and Irish Offices we shall speak of distinctly, and also of the Foreign Offices establishing agencies in the United Kingdom. These latter are rapidly increasing: wisely or otherwise on the part of the offices remains to be determined.

The Offices which had passed away were the *Globe* (1803), *Leeds and Yorkshire* (1824), *Unity* (1852) [these 3 by trans. to *Liverpool, Lond. and Globe*]; the *Birmingham* (1805) [by transfer to the *Lancashire*]; the *District* (1834) [Birmingham]; the *Sheffield* (1808); the *Hants, Susssx and Dorset* (1803) [these 3 last by trans. to the *Alliance*].

The new Offices of the decennium in *England* were :

1861 Commercial Union
,, Mercantile
,, Volunteer Service
1862 London & Lancashire
,, Prince
1863 Alexandra
,, British Nation
,, City and County
,, Friend-in-Need
,, Hercules (No. 2)
,, Mercantile Union
,, Western
1864 Albert (Marine, etc.)
,, Birmingham Alliance
,, Home and Colonial (Marine, etc.)
1864 Independent
,, London & Southwark
1865 Hercules (No. 3)
,, London and Northern
,, Non-Tariff
,, Provincial Union
1866 Household (No. 1)
,, Industrial
,, London & Manchester
,, Manchester Provident
,, Planet
1867 English (Fire & Life)
,, Permanent
,, Primitive Methodist
,, Progress (Marine etc.)
,, Re-insurance
1868 Britannia
,, British Alliance
,, Masonic and General
,, National Provincial (No. 2)
,, United Ports (Marine, etc.)
1869 Artizan
,, Commercial Indemnity
,, King's Lynn
,, Monarch (Marine, etc.)
1870 Bee Hive
,, Industrial
,, London and Midland
,, Mutual (Manchester)
,, Staffordshire

The new Offices in *Scotland* were the *Stewarton, Dunlop, and Fenwick* Mut. (1861); *Town and Country* (Dundee) (1862); *Scottish Fire* (1864); *Scottish Commercial* (1865); *Scottish Imperial* (1866); *Northern Counties* (1869); *Border Counties* (Dumfries) (1870).

In *Ireland* the *Etna* (1868) had been founded.

The foreign F. Offices having agencies in the U. K. were the *Azienda Assecuratrice* (of Trieste); the *Netherlands;* the *Concordia; Rotterdamsche & Netherlandsche;* and Messrs. Dormiel. There were also regis. in England 2 cos. (Fire, Life, etc.) intending mainly to trade in France, viz. the *International Union* and *La Gauloise.*

1871.—The great Fire Ins. event of this year was the destruction of the bus. portion of the City of Chicago by a fire, which commenced on the 8th of Oct. and destroyed about 12,000 buildings, valued with contents at £33,000,000 stg. The ins. in force on the property destroyed was £20,045,000; the adjusted losses (including £36,041 in dispute) amounted to £19,310,743. Six British Offices were interested. The loss of the *Liverpool, London, and Globe* was £699,790; of the *North British and Mercantile* £494,407! For further details see title CHICAGO. (See 1874.)

The following details of the per-centage of claims on prems. paid by 23 Brit. F. Offices were taken out by the Ed. of the *Review.* We place the letters (U.S.) after the name of each of the offices whose claims were increased by the Chicago fire :

1.	Hand-in-Hand	26·03	13.	West of England	57·27
2.	Scottish Provincial	30·42	14.	Law Union	57·69
3.	Lond. Assu.	34·25	15.	Guardian	60·21
4.	Law	37·18	16.	Queen	61·15
5.	Royal Exchange	42·21	17.	Scottish Commercial	64·06
6.	Alliance	47·10	18.	Commercial Union (U.S.)	65·75
7.	London and Southwark	48·90	19.	Provincial	70·09
8.	Scottish Imperial	52·68	20.	Atlas	70·14
9.	Union	52·92	21.	Scottish National	75·43
10.	Caledonian	53·00	22.	North British (U.S.)	97·65
11.	Royal (U.S.)	55·08	23.	Liverpool, London and Globe (U.S.)	104·17
12.	General	56·89			

Some of the Brit. Cos. suffering by the conflagration, as the *Imperial, Britannia,* etc., are not included in the return. Several of the offices not undertaking U.S. bus. had above the average of claims during the year. The total amount of prems. received by these 23 offices was £4,093,613; the total losses paid amounted to £3,081,858, or 75·28 p.c. of prems.

It was during this year that the proceedings of Wm. Anthony, in causing wilful fires in various parts of Lond. in order to obtain the rewards which are paid for calling the F. engines, were discovered. For details see FIRE CALLS under this date.

There was enacted the 34 & 35 Vict. c. 43—*An Act for the amendment of the law relating to ecclesiastical dilapidations,*—wherein are contained certain provisions regarding the ins. of houses and buildings attached to benefices. The details have already been given under title ECCLESIASTICAL BENEFICES. (See 1872.)

This year there was pub. in Philadelphia: *A Treatise on the Law of Fire Ins.,* by Henry Flanders. The work is one of considerable excellence; it systematizes the principles deducible from the numerous cases under fire pol. which have come before the U.S. Courts—far more numerous than those before the Brit. Courts, and presenting a greater variety of points involved. This work has been of the greatest possible service to fire underwriters in the U.S., and should be better known than it is here.

1872.—In Nov. Mr. John M. M'Candlish, Man. of the *Scottish National* Ins. Co., delivered an Address to the Actuarial So. of Edin. on *Fire Ins.,* wherein will be found many points of great interest; indeed we regard it as the best exposition of the practice of F. Ins. we have yet met with, and we place it under contribution accordingly :

> The bus. of F. Ins. has somehow come to be closely associated with that of Life Assu. In the U.K. there are at least 33 cos. which carry on these businesses in combination; and in several other cases, where they are conducted by separately organized cos., the persons composing these cos. and conducting them are nearly identical. We need not inquire at present whether or not this close alliance is a natural one, or whether it is beneficial on one side or both; it is at least certain that where the alliance exists the interests of the one bus. can scarcely be separated from those of the other; and to those who are studying Life Assu. it cannot come amiss to know something of the principles on which Fire Ins. is based. The subject indeed is entitled to consideration beyond the limits of professional circles. . . . There are thousands of persons in this country who, as shareholders of F. Ins. Cos., are directly interested in the questions now to be discussed; and these questions more or less concern every member of the community who owns any property that is capable of being damaged by fire.

Proceeding to notice the elements of exactitude on which the bus. of Life Ins. is based, he continues:

> F. Ins., as we shall presently see, has none of these elements of certainty. Much ingenuity and many curious statistics have been adduced to show that events which we are accustomed to regard as purely accidental must be governed by some law, and that their recurrence in the same proportions, or in the same sequence, may be confidently looked for. *Those who are engaged in the bus. of F. Ins. are not without the suspicion that some regularity may be traced in the number and severity of the fires by which Ins. Offices suffer, and that they are even liable to periodic cycles of increase and decrease. But if this be so, it is certain that the law of recurrence has not yet been ascertained or formulated so as to be of any practical use.*
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> It might hence be concluded that F. Ins. is a far more hazardous and speculative sort of bus. than L. Assu.; but there is another distinction between them which in a large degree makes up for these greater uncertainties. The contracts undertaken by a L. Office are intended to subsist for very long periods of time. A man assuring his life at the age of 25 will prob. live for about 40 years, and may possibly live for 60 or 70; and the contract must be based on principles fitted to stand the test of experience throughout these long periods. But very few F. Ins. contracts are made for more than a year, and thus ample opportunity is given for revising their terms from time to time if they prove to require revision. Neither F. nor L. Ins. need ever prove unprofitable, although both are no doubt capable of being mismanaged. But in F. Ins. rashness and folly are visited by speedier punishment. The check follows the mismanagement with a happy rapidity which ought to prevent any very fatal accumulation of mischief. The errors arising from an imperfect experience or a too sanguine generalization are capable of being corrected almost from day to day. While the L. Office, treading on the firm ground of well-determined laws, steps out boldly and undertakes engagements which may bind it for half a century, the F. Office creeps along from year to year, feeling its way, watching the ever-varying contingencies which affect it; raising and lowering its rates as growing experience dictates; and having to deal with hazards which it can measure very imperfectly, it so deals with them as to attain a high degree of safety, not greater than that of well-directed L. Assu., but certainly not less.
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> The principle which lies at the root of F. Ins. is one sufficiently obvious when stated, but not unfrequently lost sight of. Every time that property suffers damage by fire—unless in those rare cases where it is intrinsically worthless or noxious—*there is an absolute loss to some person or other.* This is often forgotten. The owner of the property is recouped by means of his ins., and therefore does not lose; and the Ins. Co. may be said to gain by its losses. It is by fires, as it were, that it makes its living; and if at the end of its year its bal. is on the right side, the losses during the year are regarded as having been inevitable: they have been expected and provided for; and if the Co. does not feel them, still less do the public feel them on its behalf. *And yet the reality of the loss is beyond question.* The property destroyed has cost money, skill, labour, which now all go for nothing. To replace it (if it can be replaced) will cost money, skill, and labour, which might otherwise have been employed in increasing the quantity of property in the world, instead of merely leaving it as it was before. *The loss, in fact, is not felt, simply because it is distributed; and F. Ins. is the machinery for its distribution.*
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> In some countries the damage done by fire to buildings, if not to other property, is made good at the expense of the State or the Municipality, and provided for, like other general expenses, by a tax. This, in fact, is simply a mut. ins. managed by the public authorities, and is open to many objections. We prefer in this country the plan of distribution by means of joint-stock cos. under private management. But this does not alter the incidence of the loss. I observe frequently an adv. by one great office that it has paid 9 millions stg. on account of losses by fire. Its own cap. is not stated; but it is unlikely to have exceeded 1 million stg., and it still no doubt possesses all the cap. it ever did, and possibly much more. It cannot therefore have paid the 9 millions out of its own funds. It has simply been the medium by which they have been trans. from the pockets of one set of people to those of another. . . .
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> It is possible, of course, for a co. to persist in running risks and incurring losses and expenses without obtaining adequate remuneration from the persons insured, and so to involve itself in ruin. If many offices pursued so foolish a course, as their place would soon know them no more, the public would have a smaller choice of offices with which to insure; and the remaining offices would find it more easy to exact what rates they please. But practically, all offices endeavour to adjust their rates of charge to the amount of the claims they find they have to sustain; *and communities which permit many fires to prevail within their boundaries have in the end to repay to the offices in the shape of increased rates the losses which these may have occasioned.* This process goes on almost from day to day, and within a few years many large cities have afforded illustrations of the system. Perhaps a careless system of building has been permitted, or an inefficient guardianship, or dangerous mixing up of goods and processes of manufacture; or there has been an inadequate supply of water, or defective arrangements for extinguishing fires. The consequence has been that fires have abounded. Some offices have withdrawn themselves altogether from the locality, or the class of business, and the rest have largely increased their rates. London itself (its City bus.) is one example. Liverpool, Glasgow, Dublin, Belfast and Dundee are others. *In several, if not in all of these cases, the communities have profited by the lesson taught them, and set to work to remove or modify the causes of fires; and their prudence has been rewarded by a return to more moderate rates of ins.* In this way rates and losses are made to balance each other; and thus all the loss and expenses occasioned by fires, although borne in the first instance by the offices, fall ultimately upon the public.

We quote from this Address under other heads, as FIRE INS. PREMS.; FIRE INS. OFFICE COMBINATIONS; FIRE PROTECTION; etc., etc.

There was this year founded the *Wesleyan Methodist* Trust Assu. Asso., the object of which was, "To make, grant, or effect ins. against loss or damage by fire, or other risk analogous or otherwise, of chapels, places of worship, colleges, schools, house buildings, furniture, and other property belonging to the above Dissenting sects." The idea was

[illegible]

of all questions relating thereto; and generally the promotion of a good understanding amongst the members of the Ins. profession in Manchester." Nothing can be more laudable than such a combination of purposes. The belief has been very general that Fire Ins. does not afford to its students as many problems of interest as does Life Ins. We trust the present art. may tend to remove such an impression. Certainly a perusal of the proceedings of this Asso. as set forth in its Trans. pub. for the session 1874–5, and its programme for the succeeding session, would convince the most sceptical of the error of such a belief. We sincerely wish this Asso. every possible success. To the entire Fire underwriting community its operations are calculated to be of great value.

The *Review* (15 Feb.), in an able art., "Fire Ins. as an Exact Science," offers the following obs.:

> The consideration of Marine Ins. as an exact science, to which we devoted an art. in our last issue, may be appropriately followed by an attempt to regard the question of F. Ins. from the same point of view. The conclusions at which we arrived in relation to Marine Ins. were opposed to the theory that anything like absolute certainty can be deduced from the obs. and classification of results, however extended the area over which they may range, and however long may be the period passed under examination. As occupying something approaching to a medium position between Life and Marine Ins., the question of F. Ins. presents more hopeful data for the elaboration and solution of the problem. Not that we are by any means of opinion that the mere possibility of effecting the solution is to be taken as an indication that any genuine attempt in this direction will be made. On the contrary, it is almost hopeless to expect that with F. Ins., as at present constituted, and with other complications and difficulties to which we shall afterwards refer, anything will be accomplished further than what is necessary to maintain the stability and permanency of the offices. More intelligibly perhaps there is little connected with F. Ins. which can lay claim to a strictly scientific character, although its practical issues are invested with an importance which it is difficult, and indeed almost impossible to exaggerate.
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> As a matter of course it is quite easy—possibly indeed superfluous—to define the reasons why such minute care and attention have been bestowed upon the collection and elaboration of V. Sta. The varied purposes to which they can be applied have a direct interest to all classes of the community; and their application to Life Ins. is only one of their uses—although it is right we should add that to their connexion with that institution they are largely indebted for the degree of perfection to which they have been carried. F. Ins., on the other hand, can put forward no such claims to consideration. It certainly affords a very large number of individuals who have to contribute to the tax which it imposes in the way of prems.; but regarded as a positive necessity, and having about it a certain degree of option, it fails to attract that measure of attention which it deserves. Few people pause to reflect upon the enormous loss—*not less than 5 millions, which the country ann. sustains from fires, simply because that loss is borne by the total number of those paying the prems. Thus widely spread the loss is scarcely felt, but it is none the less real and substantial on that account.*
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> These facts then may be accepted as illustrative of the main difference between F. and L. Ins., and although the former, in all its relationships, is decidedly deserving of far more general attention than it has hitherto received, yet there seems to be very little prospect of its attracting any enhanced share of notice from the outside public.
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> The subject is therefore to all intents and purposes left in the hands of the offices, and the prosecution of its higher branches is certainly not to be expected from them. Being simply commercial asso., it is utterly beyond their province to enter upon any special investigation for the sole purpose of advancing the cause of science. *But then arises the question, may they not with very great profit and advantage to themselves pursue their inquiries into the orig. of fires, and into the antecedent circumstances of the risks, much more closely and minutely than is generally done? We decidedly think they may.* Yet there has been an evident tendency latterly, to rely solely on aggregated results, without special reference to the operating causes which have necessitated a readjustment of rates. This conclusion is supported by the fact that in two recent cases of increase, under two of the principal complex tariffs, the advance has been effected largely by adding to the normal rate, notwithstanding that in both instances the influences which had been at work in increasing the number of fires were, in our opinion, so clearly defined, and not moreover of general application, that a normal advance was both an arbitrary and an unjust step. Although F. Ins. is something that the public cannot dispense with, yet it is much more to be desired that thoroughly amicable relations should exist between the offices and the public, than that a spirit of antagonism and hostility should be aroused. *And as we have stated on a previous occasion, in connexion with the complex tariff, it is not only necessary that the total charges should cover the total losses;* [but] *it is imperative, as a matter of fair charges and equitable dealing, that when the risk is parcelled out into minute divisions, the most rigid and scrupulous care should be exercised in their definition and estimation.* That such is by no means the case was, we think, amply evidenced in our lengthy dissertation on the woollen mill tariff; *and it is in the endeavour to get rid of such anomalies as we then pointed out, that the offices may fairly devote far more attention than has hitherto been bestowed, to the claims of F. Ins. to be considered an exact science. . . . .*
>
> We have now to consider the question of fluctuation; and this it is which interposes the greatest obstacle to the satisfactory carrying out of the project. *All the principal classes of risk* are subject to so much change, brought about in far too great a variety of ways to admit of our dealing with them here: that to argue from the past into the future would be altogether impossible. Take, for example, either the woollen or the cotton mill risks—the experiences of the decade from 1860 to 1870 would afford an utterly inadequate basis whereon to rest in fixing the charges now required. *But are there not ample reasons for supposing that the aspect which these classes of risk, and some others which we could name, have presented for some years back is simply one of those strange and apparently inexplicable phases which ever and anon break in upon the most uniform and uneventful career?* If this is not the case, and the increase of fires continue in the same ratio, the rates will soon attain a preposterous figure. *We prefer to consider these startling outbreaks of fire as strikingly analogous to the plagues and pestilences which from time to time decimate the human race; and thus regarded, the difficulty of assigning to them their true position is largely diminished.* And on the whole, while the question of fluctuation may be one the complete mastery of which is well nigh impossible, still we think the investigation well worthy of being pursued, notwithstanding the formidable obstacle which is presented by this feature. An approximation to the truth is infinitely preferable to the results deduced from wild and vague speculation. We trust a desire for the maintenance of thorough harmony and good-will between the offices and the public will induce the former to devote more attention to the subject than has previously been done, even if an inclination to add to the sum total of our knowledge is powerless to induce them to stir in the matter.

Some of the points last discussed will be considered under title FLUCTUATIONS FROM AVERAGES.

There was projected this year, by Mr. Swinton Boult, the *Eagle* Fire Ins. Co., one of the features of which was the underwriting of F. risks by individual shareholders in the Co. This feature was afterwards withdrawn. At the July meeting of the Crystal Palace Company the Chairman, Mr. Thomas Hughes, M.P., suggested that the shareholders should underwrite the risk individually at 21*s.* p.c.; the Fire Offices demanding 31*s.* 6*d.*

This year, Mr. S. R. Clarke, Barrister-at-Law, pub. in Toronto: *A Treatise on the Law of Ins.* The author says in his preface: . . . "On Fire Ins. alone I have sought to make the work complete. In add. to the Canadian cases, the work contains all English, and a selection from the American cases. On this branch of Ins. Law I trust the work be found more useful to the Canadian reader than any foreign production. For the practical usefulness of the chapter on the adjustment of losses I am indebted to Hugh Scott, Esq., of Toronto, whose valuable services and suggestions in this portion of the work I here gladly acknowledge." On this point we shall again speak of the work under Fire Insurance Losses. We now bear testimony to its value in respect to that wherein its author modestly hopes it may be useful, viz. as an exponent of Canadian Insurance Law.

During this year also there was pub. in Boston, U.S., another of those modern American law books which are doing so much to make the law of ins. in its various branches understood. The work is by Mr. John Wilder May; its title, *The Law of Ins. as applied to Fire, Life, Accident, Guarantee, and other non-maritime risks.* It is impossible to speak too highly either of its method or its style. The greater portion of the work is devoted to Life Ins.

In the State of *Massachusetts*, this year, a feeling again broke out in favour of State or Municipal Fire Ins.; and finally the Ins. Commissioner was directed "to investigate the subject of the feasibility of any system of State or Municipal Ins.; and of the necessity of any change in the existing system;" and to report. The result was the pub. in the following year of a special rep. thereon, which will be reviewed under title Fire Ins., Municipal and State, where the whole of this branch of the subject will be dealt with.

1874.—It was shown in a very marked manner by Dr. W. A. Guy, M.B. Cantab. [one of the Medical Inspectors of Prisons], in his Address to the Statistical So., this year, that the education of the people, and the proper surveillance of the imbecile and criminal classes, have a very important bearing upon the interests of F. Ins. Offices. Thus, out of every 1000 healthy convicts, 20 (he said) will be found to have been convicted of arson; but the imbecile fire-raisers out of the same number will have been 70!

During this year two of the Brit. F. Offices, in consequence of the large increase of their bus., prudently increased their cap., viz. the *Lancashire* to £2,000,000; the *Northern* to £3,000,000. The prem. received on the new shares so issued was carried to the augmentation of reserve. [Fire Ins., Finance of.]

The abolition of the per-centage duty on F. Ins. deprived us of an element of statistical knowledge, which was the only good feature associated with the tax. Under the Metropolitan Fire Brigade Act, 1865, the F. Offices transacting bus. in the metropolitan district are required to contribute *pro rata* to the Metropolitan Board of Works in part support of the Brigade. By means of the returns made by the offices for this purpose it was found that the F. Ins. in force in the metropolitan district in the quarter ending 1 April this year reached £488,500,000—being an increase of 21 millions in the year. [Fire Ins., Statistics of.]

The work of the National Board of Fire Underwriters, U.S., this year took a more practical shape than heretofore. A bureau of statistics was constituted, of which Mr. Henry H. Hall became Chairman. The purpose of that bureau is to collect statistics of the experience of various offices in the U.S., and also in Europe, regarding certain classes of risks. Returns of a very comprehensive character have been obtained, and, mainly by the industry of Mr. Hall, results of considerable value have already been deduced. The preliminary rep. on woollen mill underwriting presented in March, 1874, is an instance; other reports have followed. We hope not to be misunderstood when we venture to say that too much reliance must not be placed on first results: again and again the returns will require to be sifted and investigated.

For another phase of the action of the Board, see Fire Ins. Census. [Fire Ins. Prems.]

1875.—The *Crown* Fire, founded this year, contained several "special features." Among these were (1) the issue of *Permanent Ins.* pol. by payment of a single prem. or otherwise; (2) the insuring of "actual realized profits"; (3) "animals insured will be paid for if killed by lightning." The prosp. declared: "The Co. will not be bound by any tariff."

The *Hecla* Fire, also founded this year, included in its operations "the making good of damage caused by fire and *explosions*;" or these risks may be insured separately. This is a non-tariff office.

There were quite an unusual number of F. Offices founded in this and the preceding year.

The new F. Offices registered in *England* during the quinquennium were as follows:

1871 Belfast
,, British Workman's
,, British National
,, Great Britain
,, Southern and Western
,, Universal
,, Universal Non-Tariff
,, Western Alliance (Plymouth)
1872 Morley Mut.
,, Wesleyan Methodist Trust
1873 Artisan's Co-operative
1873 Equitable (Manchstr.)
,, Leicestershire & North of England
,, Norwich Provident
,, Sovereign
1874 Brit. Col. and Foreign Property
,, Cotton Waste Dealers
,, Economic
,, Fire Re-insurance
,, Great National
,, Household (No. 2)
,, Middlesex
1874 National
,, Provident
,, Pudsey Mut.
,, Standard
1875 Church and Empire
,, Crown
,, Federative
,, Fire Guarantee
,, Government Security Co-operative
,, Hecla
,, Industrial
,, Millers'

The following Fire Ins. Cos. intending to transact bus. in France and elsewhere were regis. in Eng.:—1871, *Guernsey Mut.*; 1873, *Gallia; L'Etoile Française; L'Union Internationale.*

The following foreign offices opened branches in England: *Agricoles Caisse General; Jakor* [Anchor] of Moscow; *Le Monde; L'Universe.*

The F. Offices which have passed out of existence during the quinquennium are: *English* (founded 1867); *Industrial* Fire (1870); *Universal Non-Tariff* (1871); *Southern and Western* (1871); *La Gauloise* (1869); *Northern Counties* (1869); *Town and Country* (1869); *Artisan's Co-operative* (1873); *London and Midland* Fire (1870); *Lond. General Re-insurance* (1873); *Norwich Provident* Fire (1873); *Provincial* (1852); *Border Counties* (1870); *British Colonial and Foreign Property* (1874); *British National* (1871); *Great National* Fire (1874); *Leicestershire and North of England* (1874).

The following foreign offices have withdrawn their agencies from Gt. Brit.: *Atlas*, of Vienna; *General*, of Grünberg; *Frankfurter.*

The total number of British Fire Offices existing at the end of the year was 66.

We may conclude our hist. with the following passage from the *Spectator* of N.Y. June, 1875:—"The bus. of Fire Ins. has grown to be one of the mightiest commercial forces of the age. It employs a vast capital, and enrols under its banners, in this country [the U.S.], an army of more than thirty thousand workers. Its beneficent influence for the security, and therefore the happiness of mankind, is too great to be weighed and measured in figures. There is hardly an interest, commercial or social, that is not in some way connected with or dependent upon it; and the fire underwriter has now become as necessary a part of the machinery of civilization as the lawyer, the teacher, or common carrier. Such being the case, the loftiest intellect may not unworthily interest itself in the scientific problems which underlie the bus., and in the methods by which it is accomplished."

This art. has to be read in connexion with several which precede and follow it.

A complete list of all the Fire Offices projected and founded, and of their fate, will be given in the SUPPLEMENT.

FIRE INS., LAW OF.—It forms no part of our plan to write a treatise upon the Law of Fire Ins. under this head. The arrangement of the work is alphabetical; and as the points of practice arise, the law concerning them is stated in greater or less detail. This we conceive is the most convenient arrangement for all ordinary readers. Those who desire more systematic details regarding the law of F. Ins. will fall back upon some or one of the treatises to be named hereafter.

Under the following titles will be found practical illustrations of the Law of Fire Ins.:

ACTIONS UPON POL. OF INS.
ADJUSTMENT.
ALIENATION.
ALTERATIONS IN BUILDINGS.
ARBITRATION.
ARSON.
ASSIGNMENT OF INS. POL.
AWARD.

BANKRUPTCY.
BUILDING ACTS.

CANCELLATION OF POL.
CARRIERS, COMMON.
CERTIFICATE OF LOSS.
CHEMICAL PRODUCTS.
CHIMNEYS.
CIVIL COMMOTION.
CLAIM.
COMMENCEMENT OF RISK.
CONCEALMENT.
CONCURRENT JURISDICTION.
CONSEQUENTIAL DAMAGES
CONSTRUCTION OF CONTRACTS.
CONSUMMATION OF CONTRACT.
CONTINUANCE AND END OF RISK.
CONTRACT OF INS.
CONTRIBUTION INS. ASSO.
COUNTERSIGNING BY AGENTS.
COVENANT TO INSURE.
CREDITORS IN INSURANCE ASSO.
DAMAGE.
DAMAGES, MEASURE OF.
DANGEROUS GOODS.
DANGEROUS TRADES.
DATE OF COMPLETION OF CONTRACT.
DAYS OF GRACE.
DECLARATION OF INT.
DELIVERY OF THE POL.
DEPOSIT RECEIPT.
DESCRIPTION OF PROPERTY.
DESTRUCTION OF BUILDINGS.
DILIGENCE.
DISCHARGE OF INSURERS.
DISCONTINUANCE OF RISK.
DISTANCE OF OTHER BUILDINGS.

Dividend.
Docks.
Doors.
Double Insurance.

Enforcement of Contract.
Equitable Mortgage.
Equity of Redemption.
Evidence.
Exceptional Risks.
Excess Pol.
Execution.
Executor.
Explosions.
Explosive Substances.
Exposures.
External Protection.
Extinguishment of Interest.
Extra Premiums.

Factor, Insurable Int. of.
Fall of Building.
Falling Market.
False Swearing.
Fault.
Felony.
Fire Brigades.
Fire Extinguishment, Expenses of.
Fire Insurance, Conditions of.
Fire Insurance, Contract of.

As the work progresses, there will be numerous other headings involving points of law. The chief will be the following :

Fire Ins. Losses.
„ Policies.
„ Practice.
„ Risk.
Fires Caused Wilfully.
Floating Pol.
Foreign Attachment.
Fraud.

Gambling Ins.
Garnishee Orders.
Gas.
Goods in Trust.
Gunpowder.

Hazardous Goods.
Highway Act.

Incendiarism.
Indemnity.
Indorsement.
Infant.
Innkeeper.
Insurable Interest.
Insurance after the Fire.
Invasion.

Jute.
Jury.

Landlord and Tenant.
Legatee.
Lessee.
Lighterman.
Lightning.
Loss, Total and Partial
Lunatics.

Manufacture.
Material Facts.
Merchandize.
Misrepresentations.
Mortgage.

Natural Heating.
Negligence.
Nitro-Glycerine.
Notice.

Other Insurances.

Pawnbrokers.
Petroleum.
Possession.
Premium.
Process of Manufacture
Profits, Ins. of.
Prompt.
Proposal.
Prosecutions.
Purchaser.

Railway Co.
Reinstatement.
Removal, Losses by.
Renewal Notice.
Rent, Ins. of.
Repairs.
Representations.
Riot.
Risk.

Sale of Damaged Goods.
Sale of Property.
Salvage.
Servant.
Specific Ins.
Stamp Duty.
Statutory Declaration.
Subrogation.
Successive Losses.
Surroundings.
Survey.

Tenant.
Theft.
Time, Computation of.
Trespassers.
Transfer of Pol.
Trustee.

Value.
Valued Pol.
Vendor.
Voisinage.
Voidable Pol.

Waiver.
Warehouseman.
Warranty.
Water Supply.
Witnesses, Skilled.

There will necessarily be some other titles which at the moment we cannot foresee; but by means of cross-references they will all be brought into connexion, as far as possible.

In our art. Fire Ins., Hist. of, we have passed in review all the works which have been pub. in the English language on the law of Fire Ins. To the British lawyer in practice, as also to the student, Bunyon's *Law of Fire Ins.* is a necessity [new ed. 1875]. To the more elementary student we recommend Dowdeswell, 1846. In the U.S. Flanders's *Law of Fire Ins.* 1871 ; the *Digest of Fire Ins. Cases*, of which there are three eds.; and last, but by no means least, the *Ins. Law Journal* (Hine), commenced in 1871 and continued monthly; are indispensable. In Canada, Clarke's *Law of Ins.* 1873, is of great value.

In regard to the various countries of Europe, we give where possible an outline of the Law of Ins. applicable to each, in speaking of them alphabetically.

FIRE Ins. Licences.—By sec. 4 of the 22 Geo. III. c. 48, passed 1782, no person was allowed to insure or keep an office for insuring houses, furniture, goods, wares, merchandize, or other property from loss by fire in Gt. Brit., without a licence first had and obtained from the Commissioners of Inland Revenue. This was on the occasion of the *per-centage duty on Fire Ins.* being first imposed. The *London Assu.* and *Royal Exchange* Corps. were specially exempted, "being chartered Cos." The licences were to continue for one year; and where cos. or asso. were not incorp., two of the partners were to apply for licence and give security. Penalty, £50 p. day, and double the prems. received in such day. [Fire Ins., Hist. of.]

In 1810, by 50 Geo. III. c. 35, it was enacted that no licence was necessary for insuring property in the *Colonies*.

In 1842, by 5 & 6 Vict. c. 79, the *licences* were to continue during continuance of the co., or so long as parties in whose name it was granted continued connected with the co. and no default in payment of duty made.

FIRE INS., LIMITATION OF AMOUNTS INSURED.—The important question of the limitation of the sum insured on any one risk, in relation to the cap. or assets of the co., has been discussed in detail under FIRE INS., FINANCE OF.

FIRE INS., LITERATUE OF.—The literature of Fire Ins. in the U.K. is very scant. Such as there is has been passed under review in our art. FIRE INS., HIST. OF. In the U.S. there is a far more abundant supply. A series of art. in the *Ins. Agent*, Lond., has been of great value to fire underwriters.

FIRE INS. LOSSES, ADJUSTMENT OF.—One of the most important, and yet one of the most difficult, duties incident to the conduct of the bus. of F. Ins., is the adjustment of claims following upon losses by fire. The popular view is always in favour of "liberality" on the part of the office. Practical experience shows that liberality is productive of abuses; in fact leads up to the *creation of claims*—and so changes the base of the bus.: for to the element of *accident* becomes superadded the element of *design*. The former is usually regarded as being in some sort within the range of average. The latter, known to ins. officials as the "moral hazard," is prob. affected by fluctuations in trade—for in "bad times" fires do seem to increase; but is mostly arbitrary, depending perhaps mainly on the supposed chances of detection. On the whole, then, a strict bus. mode of adjusting claims is perhaps most desirable for all parties to the contract. Whenever the time shall arrive that persons seeking ins. shall take a "liberal" view of the prems. to be paid, and of the classification of their risks, giving the ins. co. the benefit of the doubt in these matters, it will be time enough to inaugurate systematic liberality in the adjustment of claims. In the mean time, as the offices have to obtain from the whole body of the insured, by means of the prem., the full measure of the losses, we will assume it to be in the common interest that no inducement shall be offered either for the multiplication of claims, or for changing the base of the contract of F. Ins., which is strictly that of indemnity.

The term "adjustment" is a technical one, and signifies the entire processes involved in ascertaining the liability of the ins. office, or underwriter, in regard to any given loss. [ADJUSTMENT.]

We now proceed to review the points which arise in connexion with the process of adjustment of fire losses; and to quote cases in support where necessary. The heads it will be convenient to arrange in the order in which they present themselves in practice.

Notice of Fire.—It is clear that the first thing to be done after a fire has occurred, and all possible steps have been taken to extinguish it, or to limit its scope by removal of property, etc., is to give notice to the co. issuing the policy. The conditions of the pol. usually require that "notice shall be given forthwith" to the office. Any delay in this regard may in itself be regarded as an element of suspicion. The law upon the subject will be more conveniently reviewed under NOTICE OF CLAIM.

Particulars of Claim.—It is always stipulated in the conditions of the pol. that within a given time, usually within 15 days, the claimant under a pol. must deliver to the Co. a claim for any loss or damage, containing as particular an account as may be reasonably practicable of the several articles or matters damaged or destroyed by fire, with the estimated value of each of them respectively, *having regard to the value thereof at the time of the fire*. It is not only reasonable that this should be done; but that it should be done thoroughly. The practised eye of the assessor of losses will soon form his estimate of the motives at work in the preparation of these particulars—whether simple indemnity is sought for, or whether there is any attempt to make a profit out of the disaster. If there be any indication of the latter, the *cause of the fire* will deserve special attention.

The non-compliance with this condition may in itself be fatal to the claim, whereon the following cases are in point.

In *Mason* v. *Harvey*, before the Court of Exchequer in 1853, the facts were as follow: The plaintiff, a pawnbroker, was insured in the *Norwich Union*, £150 on shop and £1000 on pledges. The pol. required that "full particulars" of the loss sustained be delivered within 3 months; such accounts to be supported by testimony, if required. No such particulars were delivered; but action was brought under the pol. It was *held*, that the delivery of particulars was *a condition precedent to the right of the insured to recover for the loss*.

In *Roper* v. *Lendon*, before the Queen's Bench in 1859, the plaintiff was insured in the *Kent* Fire Ins. Co. The ins. was upon furniture, etc., in dwelling-house for £400. The pol. required particulars of loss to be delivered within 15 days. The plaintiff claimed for a total loss and did not furnish particulars:—*Held*, that the delivery of particulars within 15 days after the loss *was a condition precedent to the right to sue on the pol.* A point in regard to arbitration occurred in this case which we shall speak of under head of "Proof."

Evidence in Support of Claim.—The conditions of F. pol. further require that the particulars of claims shall be supported by "all such vouchers, proofs, and explanations as may be reasonably required;" together with, in some cases, a statutory declaration of the truth of the statement rendered. It is only right that those who are called upon to pay the money shall have the means of being reasonably satisfied that they are paying for a loss actually incurred. The law is clear upon this point. In regard to the words used in some pol. that the evidence supplied shall be "satisfactory to the directors," this does not mean such evidence as caprice may require. Satisfactory must here be read sufficient; or such as would satisfy reasonable men. This is clearly laid down in *Strong* v. *Harvey* (1825), a Marine Ins. case, where the Committee had refused to adjust, although requested to do so by the insured; and still more recently in *Braunstein* v. *Accidental Death* Ins. Co. (1861), as already set out in the early part of our art. EVIDENCE.

Statutory Declaration.—In the earlier F. pol. (many of which are still in force) was contained a condition to the effect that all claims should be supported by a certificate of the minister and churchwardens, as well as of some respectable householders of the parish not concerned in the loss, stating that they believed in the *bona fides* of the claim. That this condition was upheld by the Courts, even to the extent of excluding a claim in a case of non-compliance, we have already shown under F. INS., CONDITIONS OF. There was occasionally a hardship here, inasmuch as the claimant had no power to compel any of such parties to give the required certificate. Modern practice has substituted, and wisely so, a statutory declaration by the claimant himself of the justice of his claim. If such a declaration be "false or untrue in any material particular," the statute 5 & 6 Wm. IV. c. 62, s. 18, provides that "the person wilfully making such false declaration shall be deemed guilty of a misdemeanor."

Under the head of FALSE SWEARING we have already reviewed the consequences which may follow from such a course. They fall again to be spoken of under our next head.

Fraudulent or Excessive Claim.—F. pol. now have a condition that any attempt at fraud in making an excessive claim, or any false declaration in supporting it; or if the fire was occasioned wilfully at the instance of the insured; all right of claim under the pol. shall be forfeited. This is a most important condition, and requires careful consideration. Mr. Bunyon (*Law of Fire Ins.*) says concerning it: "A mere claim for a larger sum than the jury shall think fit to award, if short of fraud, will not in general affect the right to receive the value of the actual damage; *but an unfair claim may be evidence of fraud, and, in fact, amount to an attempt to cheat the insurers.*" The cases upon this point will be considered under titles FRAUD, and FRAUDULENT CLAIMS, in their alphabetical places.

Arbitration.—In the event of dispute, or impossibility of agreement, between the claimant and the office, the matter may prob., under the conditions of the pol., be capable of being referred to arbitration, or it may be compulsory that it be so referred, *in view of ascertaining the actual sum at which the loss is to be adjusted.* The arbitration clause differs in the pol. of the different cos.; and even in the pol. of the same co. at different periods of time. But for an outline of the points which may arise the reader should turn to title ARBITRATION in this work. See also clause 11 of conditions of pol. given at p. 414 of the present Vol.

Rules.—It may be well here to review certain estab. points of practice in regard to the adjustment of fire losses:

Agricultural Produce.—In the case of farming stock losses, the amount payable for the property consumed will be the market price of the day, less the cost of preparing and bringing the stock to market. It is, however, says Mr. Bunyon, very material to remark that it often happens that the farmer who insures his produce is bound by restrictive covenants in his lease, or by the custom of the country, not to sell or convey away any straw, hay, or other like produce during his tenancy; and at its termination to leave such produce, with the manure, upon the farm, to the incoming tenant, at a valuation or not, as the case may be. In such a case the market price of the hay or straw would usually far exceed the spending or consuming, or, as it is termed, "the fodder" value; and it is considered that the insurer, who can claim an indemnity only, is not entitled to more than the latter.—*Law of Fire Ins.* 2nd ed. p. 112.

In the adjustment of losses upon agricultural produce, the adjuster will have to ascertain whether the conditions of average apply.

Goods in the Hands of Dealers.—In the case of manufactured goods in the hands of a dealer, the insurer will always be entitled to evidence of actual value. The invoices, showing the cost price, may in many cases be sufficient; and in the case of retail dealers, where heavy stocks are not kept on hand, would generally be so. But where the stocks are of such a character as to be liable to depreciation by changes of fashion, or otherwise, by lapse of time, the cost price may be no criterion of the damnification of the assured. Again, in the case of consignments from abroad, the invoice price may be no criterion, unless it is known what are the terms of sale and discount allowed, since profits will not be paid for; and what may be the minimum selling prices indicated by the last instructions of the consignors to the consignee. In all these cases, much depends on the custom of the particular trade; and if there is any difference of opinion or doubt in the minds of the parties acting for the insurer, it is the usual practice, and the only safe one, in large losses of this nature, to refer the adjustment to independent persons in the trade, one on either side, to determine the value, with a reference to some third party in case of difference. "This (says Mr. Bunyon) is an easy and cheap mode of arbitration, and cannot be objected to by either party. The valuers are not likely to deal hardly with the assured, since they cannot tell but that the next day they may not be claimants themselves; while the assurers may safely trust their interests to the integrity of mercantile men of respectable standing, particularly when they have a partial right of selection, as in the case supposed."—*Law of Fire Ins.* 2nd ed. p. 111.

Goods in the Hands of Manufacturers.—In the case of goods in the hands of the manufacturers, the cost of production is the measure of damage, exclusive of profits. The reason that the cost price is here taken is obvious. It may be assumed that the goods would not be manufactured at a loss. But Mr. Bunyon adds an opinion, that if it "could be proved that a manufacturer held an old and depreciated stock, the settlement, upon the principle already laid down, must take place according to the more general rule of the actual value." The sum to be claimed will then, in the absence of special circumstances, be the value of the raw material, with the add. of the cost of conversion into the manufactured article, but without any add. thereto for int. on cap. employed, either in plant or machinery.—*Law of Fire Ins.* 2nd ed. p. 110.

Merchandize.—In the case of merchandize, the price current on the day of the fire is the rule applied to determine the liability of the fire underwriter. The cost to the insured does not enter into the calculation. The exception to the rule is in the case of merchandize sold, but not delivered; and destroyed by fire during the days of "prompt." The ordinary sale conditions in such cases provide that the goods shall be at the risk of the seller until the prompt day. Such goods have therefore the protection of existing pol. running up to that time. But merchants have contended for something more than this—viz. that as to goods so sold they should be held protected up to the sold price. This, however, must be made the subject of special agreement, which may take the following form; or may be limited to the first clause only, as shall be agreed between the parties:

> *Memorandum.*—It is declared and agreed that, in case of loss or damage to the goods hereby insured, their value shall be estimated at the market price of such goods immediately before the fire, except in the case of goods actually sold, but lying undelivered under unexpired prompt, *which goods shall be valued at the contract price of the sale, and no other.*
>
> And it is further declared and agreed, that if goods within the terms of this pol. shall have been purchased by the insured, but not delivered to him, and the same shall have afterwards increased in their market value, then the difference between the contract price of the purchase by the insured and their market price immediately before the fire shall be included in this ins.
>
> In the case of goods purchased and resold before their delivery to the insured, the difference between the purchase and the sale prices may be insured by special agreement, but not otherwise. [PROFITS, INS. OF.]

The incidents, both practical and legal, which surround this branch of adjustment, are fully discussed by Mr. Bunyon, to whom we must refer the reader for add. details.

Valued Pol.—In Fire Ins. as now practised, "valued pol.," such as are issued in connexion with Marine Ins., do not exist. The meaning of a valued pol. is that the article insured is agreed to be adjusted at a certain price if it be lost within the conditions of the ins. [VALUED POLICIES.] See also sub-heading "Abandonment" in this art.

Total Loss.—A total loss, in the language of F. Ins., does not mean, as in Marine Ins., the total destruction of the property, but its destruction or injury to such an extent as to render the insurer liable to pay the total sum insured. A ship may be, and perhaps often is, caught by a hurricane and lost, with all hands on board; but a fire rarely totally destroys the insured property.—Bunyon, *Law of Fire Ins.* p. 115.

Abandonment.—The principle of "Abandonment to the Underwriters," so prevalent in Marine Ins., is held not to apply to the contract of F. Ins. That is to say, a person whose goods, being insured, sustain damage, cannot abandon the salvage to the Ins. Co., and claim immediate payment of the loss from the Co. Mr. Bunyon, speaking of a case wherein such a claim was set up, says:

> A careful consideration of the contract of F. Ins. will, however, at once prove that the contention thus raised could not be sustained. The terms in which the contract is couched—which are by the way much more limited than those of a marine pol.—negative the claim: for the obligation is to make good to the assured such loss or damage by fire as may happen to the property—not, in the event of damage, to purchase it at the price of the day of the fire; neither have the insurers any right to compel the assured to hand over the property to them. The right of abandonment as exercised under a marine pol. is, moreover, inapplicable, since it does not arise where the goods ins. come into the possession of the assured, although in a damaged state, yet still marketable at a proportionate price; but only where there is a total loss either absolute or constructive; no amount of damage, however great, which does not threaten the entire destruction of the thing insured, justifying an abandonment. . . .

See ABANDONMENT; also CONSTRUCTIVE TOTAL LOSS.

Partially Damaged Goods.—It is customary in regard to partially damaged goods to ascertain the amount of the damage by a sale by auction, with the consent and for the interest of all parties. The damaged goods are placed in the hands of the auctioneer, who accounts to the insured or the insurers, as the case may be, for the proceeds of the sale, less the expenses—the difference between the value of the goods at the time of the fire and the proceeds of the sale being made good by the insurers. "In such a case (continues Mr. Bunyon) it is essential to their interests that undamaged goods should not be included, since the loss by a forced sale may be very great, and a responsibility thereby thrown upon them, which can, in no case, be fairly entitled a damage by fire." Further:

> And it is here that the importance of the question of *abandonment* arises. It is one thing for the insurers to pay for the injury actually occasioned, and another to become the immediate purchasers of a vast amount of merchandize, which they may only be able to realize on terms far below its value. If, however, the insured and the insurers cannot agree as to the mode of disposing of the salvage, the former may be entitled to test the amount of his loss by a sale, without their concurrence; but he will be responsible in such a case for the propriety of his proceedings.
>
> It is also important to observe that the rule which holds good in Marine Ins., that the insurers "are not liable to loss, owing to the assortment being broken," is equally applicable here; and that therefore, if out of whole packages or bales of manufactured goods only a few articles are damaged, the assured will not be entitled to have the sound and damaged goods sold together: since the insurers are not liable for the loss to the sound portion—being accountable only for the actual injury done to the things insured, by the direct operation of the peril insured against, and not for consequential damages.

Salvage.—This question, which is important in regard to many fire losses, where the goods are injured by water or by steam, rather than by the direct influence of fire, will be considered in a separate art. FIRE INS. SALVAGE.

Double Ins.—For the law and practice in cases where the same property, goods, or effects are insured by several persons, or by the same persons more than once, see general title DOUBLE INS.

Successive Losses.—It seems clear that, in the event of several losses occurring in regard to the same property *during any one year of insurance*, no more than the amount of the pol. can be recovered in the aggregate—and herein F. Ins. differs from Marine Ins. We shall review this subject fully under title of SUCCESSIVE LOSSES in its alphabetical place.

Apportionments.—Where several offices are carrying insurance upon the same risk, or where pol. of different classes issued by any one office exist, there will in the case of fire be an apportionment of liability. This will be considered in a separate art. FIRE INS. LOSSES, APPORTIONMENT OF.

Exemption from Liability of Ins. Co.—In regard to certain classes of loss by fire, as those consequent upon riots, civil commotions, or occasioned by military or usurped power, the ins. office is specially exempted from all liability under the pol. by express condition. In these cases the owner frequently has his remedy against others. See CIVIL COMMOTION; MILITARY OCCUPATION; WARFARE.

Adjustments not Final.—After any or nearly all of the preceding stages shall have been passed through—to the extent that the sum to be paid, and the time of payment, have been agreed upon; still, so long as the money has not actually been paid, the adjustment may be opened by either side upon cause shown; while even payment itself is not final as against the insured upon proof that he has omitted the enumeration in his schedule of goods, which he is entitled to recover upon; or against the office if it shall discover that any fraud has been practised. In this regard Fire Ins. follows the law of Marine Ins., where there are many cases in the books of re-opening settlements. It is not necessary here to follow up the subject in detail.

The literature bearing upon this branch of practice will be more conveniently noticed under the general head of FIRE INS. PRACTICE. [FIRE INS., CONDITIONS OF.] [FIRE INS. POL.]

FIRE INS. LOSSES, APPORTIONMENT OF.—It very usually happens in regard to mercantile losses, that the property destroyed is insured in several different offices; and this not from any intention of being over-insured, but from circumstances of trade. The incidents that arise out of this state of things are frequently of a very complicated and technical character. We have already dealt with the outlines of the practice in the U.K. in our art. APPORTIONMENT OF FIRE LOSSES; while under AVERAGE POL., *Fire*, some of the details are reached. Under other titles, such as FLOATING POL.; NON-CONCURRENT POL.; and SPECIFIC POL., we shall have to deal with other parts of the subject. This being so, we do not intend to enter upon further details of the practice in the U.K. here. If we be required to justify this course, we have but to refer to chap. vii. in the new ed. of Mr. Bunyon's *Law of Fire Ins.*, "Apportionment and Joint Contribution between Co-insurers," where the entire question is treated in a masterly manner, from a legal point of view, and to which the reader should turn.

It is desirable that we should now look to the practice which prevails on this subject in the U.S.; and the course is made easy for us by the pub. in 1872—since our art. on the APPORTIONMENT OF FIRE LOSSES was prepared—of Mr. Griswold's *Fire Underwriter's Text Book*, wherein the practice in force there is fully set forth; and this too by one who is practically conversant with the subject—having been professionally concerned, we believe, in unravelling the unprecedented complications which arose out of the Chicago catastrophe in the preceding year. In view, then, of giving our readers the benefit of this extended experience, we propose to review the practice of F. Loss Apportionment, as it now exists in the U.S., following as our authority Mr. Griswold's able work.

Apportionment is the act of determining the rateable proportion that each pol. written upon all or any of the property at risk, must, under its own terms and conditions, contribute towards the payment of the *ascertained general loss*, whether such pol. covers by a specific, general, or floating form, either concurrently, or non-concurrently. In making up an apportionment of loss among the several cos. interested, *all existing valid pol. must be included, even though a co. issuing any one or more of them may have subsequently become insolvent.*

From the nature of the contract, the insured can recover no more than the amount of the actual loss within the ins., in how many different cos. soever he may hold pol. upon the same subjects. *Nor can he recover from any one co. more than its rateable proportion of the general loss.* On the other hand, when the amount of the ins. is enough to cover the loss upon the subjects insured, *no apportionment between the cos. having non-concurrent pol. is allowable that will fail to pay the full amount of the loss upon all or any of the items under the protection of any of the pol.*, which are liable to their full extent, if necessary, upon *either* item covered by them.

It may happen that the pol. may cover some portions of the property to an extent beyond the loss, while on other portions the loss may exceed the aggregate or specific insurance. The apportionment should be made accordingly: *and if the insured has failed to cover the whole risk, he is to be considered as his own insurer* (but not co-insurer) *for the excess of value.*

Specific Ins.—Apportionment under specific ins. becomes a simple matter of the value of the property lost or damaged, and the amount covered by the ins.: as the insurers pay all the damage sustained within the amount of the pol. or policies, without reference to the value of the property. If there be more than one pol., the loss is paid pro rāta as the ins. bears to the damage. When specific pol. are found in contact with compound ins., the contributive liability of the latter with the former cannot be ascertained until the amount of ins. upon the *specific* subjects shall have been determined.

Average Clause.—Apportionment of contributive liability under pol. subject to average will require from the insured a valuation of the entire property under the protection of the ins. at the time of the loss, and gives him only such proportion of the loss as this value may bear to the ins. specific or in the aggregate, as the clause may read: thus making him co-insurer for such excess of value as there may be beyond the ins.; and requiring him to *contribute*, as co-insurer, in the same proportions.

When a pol. *subject to average* is interested with other pol. not subject to average, the contributive liability is not affected by the average clause. As between that pol. and others, it must be held as contributing ins. to its full amount: such clause being operative only between the pol.-holder and the co. issuing it. In American practice any deficiency arising from the operation of this clause *must be borne by the insured as co-insurer*, and not by any of the co-insuring pol. without the clause.

The difference in the position of a party holding a specific ins. (*i.e.* without the average clause) and one holding subject to average, is very marked, and should be kept in view in making up adjustments, where the two classes are interested. The holder of the simple *specific pol.* bears all the loss in excess of the ins., and is entitled to the salvage, if any. The holder of the *average pol.* not only bears all the loss in excess of ins., but must in add. contribute to the payment of his own loss under ins., in the proportion that the excess of value of the property at risk, over the amount insured thereon, bears to the amount of such ins.; *and he shares the salvage, if any, in the same proportion as if he were another underwriter, to the amount of such excess value.*

Compound Pol.—[These are equivalent to the floating pol. of the U.K.] Apportionments under *Compound pol.*, when confined to single or concurrent pol., are, like the specific, mere questions of value, and are paid accordingly; but when combined with the specific form, or with other compound ins. in any of its manifold forms, so common in heavy business transactions in large cities; and especially when such double ins. is non-concurrent in a greater or less degree; questions of rateable apportionment among co-insurers arise which will require considerable familiarity with the peculiar forms and characteristics of non-concurrent pol. to solve correctly: the more especially when assuming one or the other of the protean forms of the compound pol., which not unfrequently give rise to cases where it is impossible to find an equitable principle of apportionment as set forth in any of the existing rules.

Mr. Griswold considers "the most, if not all, of the current misapprehension and confusion attending the application of the principles underlying the contribution clause to the apportionment of losses under compound pol., arises from a non-appreciation of the more distinctive peculiarities presented by non-concurrent pol. when affected by double ins., specific and compound, which peculiarities are always more or less prominent —as the case may be more or less involved—and are at all times vital to the correct apportionment of the liability among the co-insurers."

Paradoxical as the assertion may appear to the ordinary observer, he contends that it is nevertheless true, that a *compound pol. is simply specific ins. in the aggregate*, requiring only the occurrence of loss upon any one or all of the several subjects under its protection to determine its specific liability upon each item so covered. And like other specific pol. it is liable to contribute with other ins.—specific or compound—when interested in the same loss, only to the extent to which it may be concurrent upon any one or more items of the general loss, after its liability shall have been so determined. Such concurrency may be *general* or *partial*. This he proceeds to illustrate in some detail.

Rules.—The number and variety of existing rules, both English and American, intended to solve the problem of the operation of compound pol., Mr. Griswold regards as but so many evidences that the existence of these peculiarities has long been recognized; "but the acknowledged inadequacy of existing rules, to apply with anything like uniform and reliable results in *all cases*, is simply further evidence that these distinctive peculiarities have not been appreciated to their full extent, or, in other words, that no thoroughly systematic grouping or classifying of compound pol., according to their distinctive characteristics, has ever been recognized or practised by fire underwriters." We now propose briefly to state the several rules in use, past and present, in the U.S.; the use of any of these being left to the individual adjuster, who "adopts such method as may seem most advantageous for his own co. at the time, or as mere caprice may dictate;" thus often leading to litigation:

I. *Reading Rule* [so named after Mr. Reading, its originator].—If, at the happening of any fire, the insured shall have a pol. or policies, covering, in one sum, property or interests other than is expressly covered by this ins., and at the same time including and covering the specific property or interest herein expressed, then, to determine the amount for which this co. is liable, such more general pol., as between the insured and this co., shall be considered *other ins.* on the specific property on which loss is claimed, in proportion as the sound value thereof shall bear to the value of all the property covered by such more general pol.

II. *Finn Rule* [so named after Mr. Finn, its originator].—If, at the happening of any fire, the insured shall have a pol. or policies, covering, in one sum, property or interests other than is expressly covered by this ins., and at the same time including and covering the specific property herein (by this pol.) expressed, then, to determine the amount for which this co. is liable, such more general pol., as between the insured and this co., shall be considered other ins. on the specific property on which loss is claimed, in proportion *as the loss thereon shall bear to the loss* (happening at the same time) *on all the property* covered by such more general pol.

Here the contributive liability of the pol. is based upon the *loss* (instead of on the *value*, as in the Reading Rule), in the proportions as the *loss* upon the specific property shall bear to the *loss* upon all of the property covered by the general ins.

III. *Albany Rule* [sometimes called the *Heald* Rule, after the able underwriter of that name].—If, at the happening of any fire, the insured shall have other ins., which includes premises or property herein insured, provided such pol. or policies *shall at any time, or under any circumstances or contingency, be liable to the insured for any amount whatever*, such pol. or policies, *as between the insured and this co.*, shall be considered as co-insurance, and liable to contribution, anything in the said pol. or policies to the contrary notwithstanding.

The effect of this rule, which was first used in the adjustment of the losses at the great fire at *Albany*, N.Y., in 1860, where some 20 offices were interested, is to place all pol. on an *average* basis in regard to contribution, whether they were orig. so designed or not.

IV. *Rule.*—If, at the happening of a fire, the insured shall have ins. by a pol. or policies, covering in one sum property or interests other than is covered by this ins., and at the same time including the specific property or interest hereby insured, then, to determine the amount for which this co. is liable under this pol., the amount of such more general pol. or policies shall be held to apply to and cover the *separate properties* or interest covered thereby, so that, as nearly as the amount of such more general ins. will permit, such several properties or interests *shall each be insured* in the proportion that the whole ins. thereon, including the amount insured by both general and specific pol., bears to the sound value of all the property covered thereby.

This is similar to the *Reading Rule*. It makes the compound or floating pol. contribute to average, in the relation they may bear to the whole value of the property—giving the insured the benefit of the specific ins.

V. *Rule.*—This rule is compounded of 3 clauses: 1. The *Reading* Rule entire. 2. The second clause of the English average conditions [see AVERAGE POL. (*Fire*)]. 3. Providing for statements of loss which will enable adjustments to be made in conformity with the two previous clauses. This rule appears to have been superseded by the rule embodied in Condition No. 8 of the National Board Pol.

VI. *Rule.*—This also consists of 3 clauses: 1. The *Albany* Rule. 2. This is intended to bring the apportionment within the contribution clause, where the *Albany* Rule fails to give full indemnity. 3. Presents an alternative regulation to meet cases to which the other sections may not fully apply. It cannot be regarded as a success.

VII. *Rule.*—Consists of the *Albany* Rule to its full extent, with a second clause, which provides in effect, that when the *Albany* Rule fails to give full indemnity, a re-assessment shall be made, releasing the compound ins. when over-assessed, and compelling further contribution from the unappropriated specific pol. This rule appears more equitable than some of the preceding.

All these varied rules appear in their turn to have been discarded in favour of the principle embodied in Condition No. 8 of the National Board Pol. given on p. 415 of this Vol. But then it will be remembered that practically all fire pol. issued in the U.S. embody the principle of Average. The student will find the study of these several forms of much service in gaining an insight into F. Ins. Apportionments.

The literature bearing upon this branch of the subject will be reviewed under FIRE INS. PRACTICE.

FIRE INS. LOSSES, ASSESSOR OF.—See ASSESSOR OF FIRE LOSSES.

FIRE INS. LOSSES, PAYMENT OF.—The questions incident to the adjustment and apportionment of Fire Losses being disposed of, there yet remains to be reviewed the points which may arise in regard to the payment of the claims; more particularly in view of the application of the money insured in the pol. Neither the anxiety, nor the responsibility, of the management by any means terminates with the labour of keeping the claims below 60 p.c. of the prems. [FIRE INS., FINANCE OF.] Under the general titles of ARBITRATION; ASSIGNMENT OF POL.; BANKRUPTCY; CLAIMS (sub-heading *Fire*); and others, we have already anticipated some of the difficulties here referred to; while under FIRE INS. PRACTICE, and many others, further illustrations will occur.

The following sub-headings will cover the points here involved.

Enforcement of Claims.—A claim being adjusted, and properly apportioned among the several offices interested, where more than one, and still remaining unpaid beyond the stipulated time—a most unusual event—has to be recovered by due process of law. This part of the subject has already been dealt with under ACTIONS UPON POL. OF INS.; while under title EVIDENCE, sub-heading *Fire*, is set forth in some detail the nature of the testimony which may be adduced on either side. [CREDITORS OF INS. ASSO.]

Measure of Damages.—Every action brought involves a consideration of the measure of damages: that is, where the amount of the loss has not been previously determined by the ordinary processes of adjustment. For the points which arise in this connexion see titles DAMAGES, and DAMAGES, MEASURE OF.

The following case is also important in this connexion: In Ex parte *Bateman*, in re *Routledge*, before the Brit. Courts in 1856, a point of some moment regarding the ascertainment of the measure of damages from a fire was determined. A, an owner of a saw-mill, received from B timber to be sawn, and entered into a verbal agreement with him as to insuring it, which the Court considered to amount to an agreement by A to pay to B the value of the timber if destroyed by fire while on A's premises. A fire broke out, by which all B's timber on the premises was destroyed. An account of the timber burnt was agreed to between B and A, but no agreement as to the value was come to. B commenced an action against A, the declaration containing two counts, (1) for breach of agreement to insure the timber; (2) for negligence in not taking proper care of it. A then became bankrupt. B continued the action against the bankrupt, and obtained judgment, but did not sue out execution. He then applied to prove under the bankruptcy:—*Held*, that as, upon the happening of the fire, A became answerable to B for the value of the timber, and as it appeared *that timber had a market price, so that its value could be fixed with certainty*, B was entitled to prove against the estate of A for the value, *there being no such uncertainty about the value as to make the case one of a claim for unliquidated damages.* [25 L.J., Bank. 19.]

Reinstatement.—It is an essential principle in regard to F. Ins. Losses, that the office may elect to reinstate—where reinstatement be possible—rather than to pay the amount adjusted in regard to any loss. In practice this is usually applied only to buildings; but it is capable of being extended to stock-in-trade; and in certain cases to household furniture and effects, where the conditions of the pol. shall so provide.

It speaks well for the sagacity of the early founders of Fire Ins. in Gt. Brit. that they discerned the value of this regulation. Thus, in the pol. issued by the Corp. of Lond. in 1681 there is a power of reinstatement; while in the amended regulations of the *Friendly* Fire, pub. in 1684, the year after the office was founded, there was contained a provision [Sec. XII.; see FIRE INS., HIST. OF, under this date] that the So. might reinstate any insured property destroyed, *in the event of the insured refusing to take the sum awarded by the office.* The later offices all introduced a similar provision into their pol.

Nearly a century later, in 1774, the Legislature confirmed the practice by the enactment of the 14 Geo. III. c. 78—sec. 83 of which we have already given under FIRE INS., HIST. OF, at this date. The subject will be further considered under REINSTATEMENT. The statute only applied to "house or other buildings." [FIXTURES.]

Bankruptcy.—The influence of Bankruptcy in regard to claims under fire pol. has already been reviewed under the alphabetical title BANKRUPTCY. We may supplement what is there stated by the following:

In Ex parte *Leney*, in re *Barker*, being an appeal in Bankruptcy (1864), the circumstances were as follow. There was a covenant in a lease to insure in the name of the lessor all the premises and all the buildings which during the term might be erected thereon. The lessee mortgaged the premises for £500, and in the deed was contained a power for the mortgagees to insure in a sum not exceeding £500, and out of any moneys to be received by virtue of such ins., or from the sale of the premises under their power of sale, to recoup themselves principal, interest, and costs, and pay the surplus over to the lessee. The lessee insured the premises under the covenant in the lease for £1000, and the mortgagee insured for £500 in different offices. The lessee further insured in the *Phœnix* for £950, apportioning the amount in different sums amongst the stock, utensils, trade fixtures, fittings, household goods, furniture, musical instruments, etc., upon the premises, and a club or concert room erected thereon by the lessee. A fire occurred, whereby the whole of the premises was burned down, and all the property therein lost. The Co. having paid £350 in respect of the ins. upon the stock, furniture, effects, etc., on the premises at the time of the fire, it was *held*, that upon the subsequent bankruptcy of the lessee, the remainder of the moneys payable by the *Phœnix* passed to the assignees. [10 L.T. N.S. 697.]

Fixtures.—Where a tenant insures his trade fixtures under a pol. separate from the building, and they are destroyed by fire during the tenancy, the landlord is not entitled to have the ins. money laid out in the reinstatment of such fixtures under the Act of 1774—Ex parte *Gorely*, in re *Barker*, 1864.

Insurances in Joint Names.—Where pol. are issued in joint names, it is usual to obtain a receipt for moneys paid under it signed by all parties; but as a matter of law any one of them can give an effectual discharge. If any doubt exists, an undertaking of indemnity should be required. [RELEASE OF INSURERS.]

Landlords.—See sub-heading "*Fixtures*," and also "*Tenants*," in this art.

Policies Encumbered.—Where a pol. has been charged by way of mortgage, and notice thereof has been received by the co., it is necessary to obtain the formal assent of the person so interested to the payment of any money—however small in amount—under it. If difficulties calculated to cause delay arise, the money may be paid into Court under the Trustees Relief Act—10 & 11 Vict. c. 96 (1847), and subsequent amendments thereof. [RELEASE OF INSURERS.] Where the property can be reinstated, this difficulty may be avoided.

Purchaser.—In *Poole* v. *Adams*, before the Brit. Courts of Equity in 1863, it was decided that *the purchaser of property insured against fire does not, by the mere fact of purchase, acquire a right in the ins. moneys.* The facts were these: A contract was entered into with a trustee for sale for the purchase of a house, which was insured against fire in the trustee's name, after which, and before the completion of the purchase, the house was burned down. The Ins. Co. paid the ins. money to the trustee, who, without the concurrence of his *cestui que trusts*, allowed the purchaser to deduct the amount from the purchase-money upon completion of the sale. The trustee having become bankrupt, and a bill having been filed by the *cestui que trusts* against the purchaser, it was *held*, that in the absence of any provision in the contract, the purchaser was not entitled to the benefit of the money received from the Ins. Co.; and that the *cestui que trusts* were entitled to a lien upon the property for the amount deducted, as being unpaid purchase-money. [32 L.J. Ch. 639.]

Tenants.—It is clear that the tenant of premises insured by his landlord has no interest in the ins. money paid by the office in the event of their destruction by fire. He can neither enforce the landlord to reinstate, nor can he restrain the landlord from suing for rent until the premises are rebuilt, in the absence of special covenant. Hence it is usual and necessary for the tenant to insure such a sum as will rebuild the premises; and also for the *rent* during the process of rebuilding, if he desires to be fully protected. See *Leeds* v. *Cheetham*, 1827; and *Lofft* v. *Dennis*, 1859. [TENANTS, INSURABLE INT. OF.]

In the case of *Simpson* v. *Scottish Union* Ins. Co., before the English Courts of Equity in 1863, the facts were as follow: Simpson had let the property to a sub-tenant, who insured it for £500 in the office named, with the assent of Simpson. The property was burned, and Simpson verbally informed the Sec. of the Co. that he was the person entitled to the benefit of the pol., and claimed to have the money laid out in rebuilding the houses. The Ins. Co. entered into an arrangement with the tenant, and cancelled the pol. Simpson thereupon rebuilt the houses at his own expense, and filed a bill to compel the Ins. Co. to pay him so much of the sum due on the pol. as had been properly expended by him in rebuilding. It was *held*, on a demurrer by the Co.—1. That no sufficient request had been made to the Co. to satisfy sec. 83 of 14 Geo. III. c. 78. 2. That Simpson was not entitled, under the above sec., to rebuild the houses himself, and then call upon the Co. to refund the money so expended. 3. A tenant from year to year insuring is not limited in his claim on the ins. co. to the extent of his interest in the property insured.

A question was raised whether the Act of 1774 applied to property not lying within the B. of Mort. It has since (1864) been held that the operation of the Act is general.

Tenant in Tail.—In *Seymour* v. *Vernon*, before the Brit. Courts of Equity in 1852, the facts were as follow: By an order of the Court of Chancery the receiver of real estates was directed to pay for fire ins. on them. By a subsequent decree it was declared that H was tenant in tail in possession of the real estates, and the receiver was directed to pay the bal. to the account of H. A fire having taken place, it was *held*, that H was entitled to the ins. money. [21 L.J. Ch. 433.]

Attachment.—There is yet another incident concerning claims payable within the City of Lond., and this is that the money agreed to be paid on the adjustment of a loss, may, while yet in the hands of the office, be attached by legal process in the Mayor's Court. This process, and its incidents, already referred to under Attachment, will be explained more at large under Garnishment.

Interest on Claims.—Since the passing of 3 & 4 Wm. IV. c. 42 (s. 29), in 1833, so far as concerns Gt. Brit.; and since the 3 & 4 Vict. c. 105 (s. 53), passed in 1840, so far as regards Ireland; interest may be recovered on claims disputed in the Courts of Law; juries being empowered, if they think fit, to allow interest in the shape of increased damages. [Interest on Ins. Claims.]

In the early days of F. Ins. it was the custom of the offices to deduct £2 or £3 p.c. from the amount paid, after the manner then in practice in regard to Marine Ins. That has long since been discontinued.

For further points bearing upon this branch of the subject see Fire Ins. Practice.

FIRE Ins. in Regard to Marine Risks.—See Fires at Sea.

FIRE Ins., "Mixed" Principle Applied to.—We think there can be no doubt that the *County* Fire, founded 1806, was the first Fire Ins. Co. founded on what we now know as the "mixed" principle, viz. having the guarantee of a share cap., but allocating a portion of the profits periodically among the pol.-holders. This method of working has never become general among F. Offices—more particularly perhaps on account of the trouble it involves in regard to small pol.

In the U.S. the system has been in operation under the designation of "Particip. Fire Ins." The results are stated in *Lawrey's Digest of Fire Ins.* as follows:

> The plan of dividing profits with pol.-holders has been tried by many cos. with various results. Many cos. adopted this feature as an inducement to obtain bus., and after making the experiment, abandoned it on account of the vexatious complications growing out of the plan. A few cos. still retain this feature, but find it necessary to collect advanced rates on select risks, and decline writing on many classes written by other cos. This course makes them obnoxious to other cos., and demoralizes the bus. of local agents representing other cos. It does not seem like dealing fairly for agents to select their most desirable risks for parti. cos., and place special hazards in other cos., thus giving the preference to the cos. that do the least to accommodate agents and enable them to make their bus. profitable.

The subject will receive more detailed consideration under Mixed Ins. Cos.

FIRE Ins., Moral Hazard in.—See Fire Ins., Practice of.

FIRE Ins., Municipal and State.—The first proposal for carrying on the bus. of Fire Ins., of which we have any knowledge, came in the shape of a scheme of Municipal or State Finance. We allude to the proposals made to Count Anthony Gunther von Oldenburg, as set forth in our art. Fire Ins., Hist. of, under date 1609. We have reason to believe that it was in this form that the bus. was first actually commenced; and upon this supposition less surprise will be felt at the many attempts from time to time made to again reduce the bus. to this orig. basis.

It is not unreasonable to suppose that the system of forced contribution to losses from fire, which we have seen prevailed in Flanders and elsewhere on the Continent of Europe [Fire Ins., Hist. of, A.D. 1240], may have led up to the idea of a system of State Fire Ins., as afterwards developed [1609]; as indeed it may have suggested the voluntary principle of contribution by means of *King's Briefs* which prevailed in Gt. Brit. at a later date. It will be remembered, too, that fires caused by Riots or Civil Commotion, have always been treated as a municipal responsibility in the U.K. We now proceed chronologically.

1638.—The "Propositions" of William Ryley, as set forth in his petition to Charles I. at this date, given in detail in our hist. of Fire Ins., clearly point, we think, to a scheme of municipal ins.

1660.—The scheme submitted to the Common Council of Lond. this year appears to have been rejected, because it was deemed unreasonable "that any one but the City should reap the profits of the enterprise." [Fire Ins., Hist. of.]

1668.—De Laune's scheme put before the Corp. of Lond. this year—two years after the "Great Fire"—appears to have been designed, or regarded, as a scheme of municipal finance.

1675.—Mr. Deputy Newbold's proposals, before the Corp. of Lond. this year, proceed directly upon the assumption that the finances of the City are to be benefited by the practice of F. Ins. The City entertains the proposal on the like basis. At a later date the ground was changed. Mr. Newbold was in favour of floating the project as a joint-stock undertaking. The Mayor, Sir Robert Clayton, desired that the project should be managed by the Chamber of Lond.

1681.—The Corp. of Lond. did actually commence the bus. of Fire Ins. as a scheme of municipal finance; with what results we have already seen. [Fire Ins., Hist. of.]

1690-1700.—About the close of the 17th century there was laid before Parl. by Mr. Alexander Cutting, a scheme for the protection of property by means of a rate levied upon all houses, which included a Fire Brigade, a Salvage Corps, and a scheme of compensation for property destroyed, all under one head. It proposed to do away with the system of Fire Ins. then recently introduced. The real aim was unquestionably a scheme of Municipal Fire Ins. See Fire Ins., Hist. of, for full details.

1720.—A scheme of municipal or compulsory ins. is believed to have been founded in *Saxony* during this year. This extended to buildings only. The same system of State

Ins. still exists, and has been an entire failure in a financial point of view. The fires appear to have been more numerous than in almost any other part of Europe. [SAXONY.]

1753.—Magens, in his famous *Essay on Insurances*, pub. this year, says:

> Ins. from fire are introduced into several countries, though not everywhere under that denomination. At *Hamburg* there is a Fire Cassa of an old standing, wherein the principal houses are insured at the value of 15,000 Marks (which is about £1000 sterling) to be paid in case of their being burnt; the insured paying yearly one-fourth of a Mark for every 1000 Marks for expenses. Every one concerned in this office or Fire Cassa contributes to a loss in proportion to what his own house stands insured for, but no house is valued at more that 15,000 Marks, though it may have cost ten times that sum in building. *We can account for this limitation no otherwise than by supposing the intention of the Legislature to have been to curb, by this valuation, the pride of the citizens, and hinder them from being too magnificent in their buildings—a very wise maxim certainly in a trading city.*

This *Hamburg* Fire Cassa existed in 1842, when the great fire entirely exhausted it. We believe it still has at least a nominal existence.

There is understood to have been, from a comparatively early period, a system of State Fire Ins. in *Holland*. We can obtain no exact details upon the subject; but we understand that the house property over which the ins. extends is re-valued every 7 years, and new pol. are issued, based upon such re-valuation. Ins. may only be made up to four-fifths of the verified value of the property. If the ins. be for less than four-fifths, the insured is held as a co-insurer for the amount below. (*Griswold*, p. 199.)

1778.—The system of Municipal Fire Ins. was introduced into *Copenhagen*, and at later periods into other parts of *Denmark*. We have already given an outline of the results under COPENHAGEN; and under DENMARK.

1803.—Sir John Sinclair, in his *Hist. of the Public Revenue of the Brit. Empire*, advocated a system under which the public revenue should parti. in the profits of F. bus. [FIRE INS., HIST. OF.]

1845.—The bus. of Fire Ins. in *Poland*, so far as relates to buildings, is carried on as a department of State. From the Gov. accounts for this year (we believe) the total value of the buildings so insured is stated as follows:

In Towns	42,603,232	Roubles	=	£6,568,000
In Country Villages	61,156,886	,,	=	£9,428,400
Total...	103,760,118	,,	=	£15,996,400

—being an increase of £388,870 against 1844. The number of fires during the year was 196 in towns, and 1505 in country villages. The total sum disbursed in losses amounted to 560,880 roubles = £86,469; which, divided amongst 1701 cases, represented an average of £50 16*s.* for each loss. The proportion of loss to the total sum insured was about 5·40 p. 1000: being nearly 6 times as great as the full average prem. charged by the French Ins. Offices at the same date, not simply for buildings, but for all classes of risk, including manufactories and "contents" of a hazardous nature.

1846.—A scheme was brought forward in *Belgium* for placing the entire bus. of Fire Ins. in the hands of the State. A Commission was appointed, and reported in its favour: proposing to add other branches of Ins. bus. also. A 2nd Commission was appointed (1848), and reported against the project. [BELGIUM.] The 2nd Commission considered that the ins. of merchandize and gathered crops must be placed out of the question of State enterprise for various reasons: amongst these, the uncertainty of finding suitable agents under all circumstances to estimate their value; the difficulty of the mode of valuing in a large warehouse or manufactory; the constantly changing character of their contents; the depreciation in the value of articles depending on fashions or the caprice of the day; or the removal of articles after ins., with the criminal purpose of setting fire to the building and its contents.

The 2nd Commission entered upon an inquiry into the rates of contribution [prem.] levied for discharging losses in the following countries wherein State Ins. prevailed, with the following results:

In Bavaria	Average prem.	1·87	per 1000 or	3*s.* 9*d.*	per £100
In Saxony	,,	1·79	,,	3*s.* 1*d.*	,,
In Wurtemburg	,,	1·23	,,	2*s.* 6*d.*	,,
In Grand Duchy of Baden	,,	1·38	,,	2*s.* 9*d.*	,,
In Prussia...	,,	2·83	,,	5*s.* 8*d.*	,,
In Switzerland...	,,	2·50	,,	5*s.* 0*d.*	,,

In all these cases it will be remembered the ins. was undertaken by the State without any attempt at making a profit.

In *France* and *Belgium*, where the bus. is carried on by cos. with a sole view to profit, the rate of prem. for buildings and furniture was found to be only 1*s.* 9*d.* p. £100 during the same period. [BELGIUM.]

1848.—During the following year an attempt was made by the Government of *France* to monopolize the bus. of Fire Ins. for State purposes. The result will be fully stated under FRANCE; while some of the considerations to which the attempt gave rise will be reviewed under GOVERNMENT INS.

1850.—About this date, in the Duchies of *Parma* and *Modena*, the bus. of Fire and Hail Ins. was taken up by the Gov. as a branch of State finance. The same thing had happened a few years previously in the *Papal States*.

1860.—The question of Municipal or State Fire Ins. appears to have attracted attention in the State of Massachusetts about this period. The Ins. Commissioners, Messrs. Elizur Wright and Geo. W. Sargent, in the 5th Ins. Rep. pub. this year, say: "In view of the large profits of certain ins. cos., the question has been agitated whether the municipal governments of towns and cities cannot assume the function of ins. with profit to their revenues and economy to the owners of insurable property." They then review some of the facts already given in this art., and arrive at the conclusion, that "*with cos. large enough to be stable, and numerous enough to afford the public the benefit of considerable competition for bus., we shall prob. obtain the best, and on the whole the cheapest form of ins.*" But they take another view of the municipal functions, as follows:

> If our municipal governments would offer to their paid fire departments, over and above the salary, as a reward for making fires as few and harmless as possible, a certain fraction of the sum by which the loss of any year should prove less than the mean of the ann. losses of the ten preceding years—letting that fraction be determined by a ratio of division which should increase between certain limits with the increase of the said difference—they might so stimulate ingenuity, enterprise, and vigilance, that we should at length be able to insure in Boston or Lowell, as in Paris—a first-class dwelling for 2 cents on the 100 dols. To give this scheme a fair trial it would perhaps be necessary to empower the cities to give their fire departments the right to use certain measures of prevention as well as of cure. If the cities were also empowered to exact of the ins. offices concerned in the property protected whatever reward or bonus might be earned in any year, we think those offices would not be wronged, and something would be done to remedy the evil of their occasional exorbitant profits. If it be true, as has been reported, that the Chinese only pay physicians while their health is good, the abundance of pop. in that country seems to prove the wisdom of the principle. We recommend only a partial application of it to the fire disease: as the ins. cos. might have reason to complain if that malady were altogether cured. The Gov. interference with ins. which we have described seems to us the only Gov. ins. which can be practised with any valuable economy, and without subjecting the municipal corp. to a great deal of litigation, in which it is almost sure to suffer more than any private person or any other species of corp. (See 1865 and 1873.)

1865.—The *Massachusetts* Ins. Commissioners again return to the subject, and offer the following obs.:

> Gov. ins., or ins. by towns and cities, has often been proposed and earnestly advocated by men not destitute of financial knowledge, as likely to make ins. more useful, both to the citizen and the gov.; but, after giving the subject the most careful study in our power, we cannot recommend any more direct connexion of political authority in any shape with the business than what is here proposed. By some of the second-rate arbitrary governments of Europe, Fire Ins. has been practised with great benefit to their revenue, but a high price to the insured. So far as it has been tried by freer governments and municipalities, it has been to their serious cost and has turned out a failure. The reasons of this difference of results are not very hard to divine. (See 1873.)

1870.—We may at this point with advantage review the practice of State Fire Ins. as conducted in the Canton *Zurich* in Switzerland—and the system is perhaps as perfect in its working here as in any part of the continent of Europe. The plan here in force is at once compulsory and reciprocal as regards all owners of buildings in the Canton: that is to say, *every owner must be insured, and must contribute his quota to defray the general losses*. The bus. is in charge of a special department of the gov. Every building in the canton is insured at a fixed per-centage of its value. Upon this value the assessment for losses is made: all therefore contribute on the same basis. The cost of the ins. is the total of the losses and expenses of the department each year—each owner being assessed in his proportion. An estimated assessment is made at the commencement of the year, and the surplus or deficiency is in aid, or debit, of the next year.

An indirect benefit has resulted, in this respect: stringent laws govern the construction of buildings, the care of premises, the prevention and extinction of fires. The plans of proposed new buildings have to go through preliminary official examination; and unless conformable to law, the licence for building is refused. During the process of construction buildings are continuously scrutinized by officials, in view of seeing that the laws are complied with in all respects. When completed, the building is valued and insured as of course. The owner contributes to the next assessment. In case of fire the State officials adjust the amount of loss, which is forthwith paid out of the State funds.

In 1870 the gross amount insured in this Canton was 415,150,045 francs: the taxed prems. were 414,707 francs; but as the losses and expenses aggregated to 511,754 f., there was a deficiency of 97,047 f. to be added to the tax for 1871. The prem. was here rather less than an eighth of 1 p.c.—or if reduced to stg., say 2*s.* 6*d.* per £100 insured.

Early this year (1870) a law was before the Provincial Assembly of *Schleswig-Holstein*, providing for obligatory ins.

1872.—In the *Manchester* City Council, on the 2nd Oct. this year, Mr. Alderman Hopkinson moved for a Committee, "to inquire into the desirableness and feasibility of the Corp. undertaking to insure owners of real property within the city from loss by fire." The mover thought that it was quite within the province of the Corp. to undertake such a task, and that it would carry out the work better than private individuals. Fire ins., on that ground, he argued, ought to be left in the hands of the Corp. just as they were already entrusted with parks, libraries, cemeteries, water, gas, and abattoirs, with respect to which they had given satisfaction to the community. He went on to say:

> The Council had already a great deal to do with the prevention of fires by the regulations which they laid down as to the construction of houses, and also by the arrangements which they had made for subduing fires by their fire brigade. He found that in the 5 years from 1846 to 1850, the number of fires in Manchester was on an average 116 p. year; the damage done to buildings averaged £12,000 p. year: and the rateable value of property in the city was £980,000. The number of fires had

> gradually increased year by year, in something like proportion to the extension of the city and the increase of pop.; but the average of damage remained about the same. Thus in the 5 years from 1850 to 1855, the number of fires was 179; in the next 5 years it was 184; in the 5 years ending 1865 it was 238; and in the 5 from 1866 to 1871 the average p. year was 293. On the other hand, the average yearly damage to real property from 1846 to 1850 was £12,000; the average in the next 5 years was £12,280; in the third, £11,062; in the fourth, £12,600; and in the fifth, £11,700; while the rateable value of the city had increased from £981,000 to £1,700,000. The reason of this he attributed to the increased efficiency of the fire brigade. Property in Manchester, in consequence of the excellent arrangements prevailing for the prevention and extinction of fires, was subject to less risk of loss than property in the surrounding towns, and he claimed for the citizens of Manchester to have the advantage of that state of things. . . . .
>
> *His proposal was to insure real property, not stock.* The average risk may be set down at about £12,000 p. year. The greatest loss that had ever taken place in one year was £36,000, which was in 1866. It might be said that some such calamity might happen to the city as had devastated Chicago. Such a fire, he contended, could not take place in a city like Manchester, where the houses were widely spread; where every effort was made in their construction to prevent the extension of fire; and where the fire brigade was so efficient. If, however, such a calamity should occur, he would leave the case of Manchester to the sympathy, or, rather, the gratitude of other towns and of other countries; for wherever there had been a disaster, Manchester, in past times, had been forward in the liberality with which it had afforded relief. *He would let a man insure in any office he pleased, or in as many offices as he pleased, but he would always have him insure in the Corp. whether he would or not.* They might ask, how could he enforce this, or compel any one to pay the prems.? He answered, by not having prems. or any payments as such at all. He would have the case simply stand in this way, that if a man had real property in the city, therefore he was insured. He would have no payment of prems., no expenses of competition, no advertisements, no collectors. All the Corp. office would have to meet would be expenses which attended losses, and the sum required out of the rates to meet those expenses, calculated on an average of the last 26 years, would be from 1½*d.* to 2*d.* in the pound. But he contended that, in all probability, the average yearly damage caused by fire would, under the new system, be very much diminished, because of the greater attention which would be given to the efficiency of the fire brigade. It might, perhaps, be contended that the scheme was unfair because one man's property was subject to a great deal more risk than another's; but that objection was common to the whole system of municipal government. What he proposed was, not that they should at once adopt his scheme, but that a Committee should be appointed to inquire into the subject.

Nothing came of the project. A similar proposal had previously been made in Manchester.

1873.—In the U.S., this year, several of the State Legislatures exhibited a strong leaning in favour of the experiment of State Ins. These were Virginia, Maine, and Massachusetts. In *Virginia* the proposal took the form of securing to the State a monopoly of Ins. bus. as a means of making money. In *Maine* the proposal was one of security to the citizen rather than of profit to the State. In *Massachusetts* the Hon. Amasa Walker proposed that all ins. should be done either by an organization created and administered by the State, or else by towns and cities forming singly or jointly mut. asso. The subject was considerably discussed in the House of Representatives, and we believe also in the Senate. Finally, the matter was referred to the Ins. Commissioner, the Hon. Julius L. Clarke, to investigate and report—the precise terms of the reference being "to investigate the subject of the feasibility of any system of State or Municipal Ins., and of the necessity of any change in the existing system."

Mr. Clarke entered upon his task with energy. He addressed various persons whom he had reason to believe had considered the subject; and brought his own extended reflection to bear upon it. The result appeared early in the following year.

1874.—There was published in Boston, U.S., a State paper: *Commonwealth of Massachusetts: Special Rep. of the Ins. Commissioner on State and Municipal Ins.; and the Necessity of any Change in the Present System.* The Commissioner states his own views regarding the nature and scope of the question remitted to him clearly as follows:

> The change specially designated in the Resolve of the Legislature evidently contemplates the transference of the whole business of F. Ins. from private corporations, organized under existing statutes, to the executive branch of the State or municipal governments, acting in the capacity of underwriters of risks on private property. Such at least must be the practical effect of inaugurating this public competition. The proposed inquiry, therefore, must necessarily embrace the lapse of the old system, as well as the establishment of the new. It is evident, moreover, that the proposed assumption of this bus. by the State or municipal governments, thus increasing their powers and functions, cannot be justified except upon the ground of some great exigency, in the nature of a public necessity, pointing to irremediable defects or abuses in the present system, or to great benefits to the mass of property-holders which can only be gained by such a radical revolution. If it can be satisfactorily shown that the present mode of fire-underwriting, by stock and mutual cos., is unfairly or dishonestly conducted; that it involves an unnecessary cost to pol.-buyers, or does not afford them reasonable security; and that a public administration of the system would, beyond peradventure, be purer, safer, and more economical—then, and not otherwise, the expediency of such a change may be properly considered in a comparison of its possibly good with its certainly evil results. After all, it is to be adopted only when a solution of the problem shall clearly demonstrate that the former outweigh the latter.

He upholds the honour and integrity of the Fire Offices of the State: therefore on that ground no interference had become necessary. He passes to the next vital aspect:

> As regards the question of *economy*, the experience of all civilized communities proves that bus. enterprises undertaken by the Gov. are always more costly in their prosecution, and less satisfactory in their results, than when left to the close calculation and vigilant supervision of individual or corporate management. It is urged by those most competent to judge, that the sharp competition of fire underwriters in this country has already reduced the cost of ins. to the lowest possible point consistent with the soundness of cos. and the safety of pol.-holders. To be sure, the prem. rates have been recently advanced, but it is still claimed by those who ought to know best, that the advance is not in proportion to the increased hazard of risks and the frequency of sweeping conflagrations. Self-preservation is a duty which these inst. owe to the public no less than to them-

selves; and to cut down their rates below the remunerative point would be to impair their resources and sacrifice their patrons.

The F. Ins. statistics of the best managed and most successful cos. in the country, during the last 10 or 12 years, show conclusively that their prem. receipts, after deducting their necessary bus. expenses, have but little more than sufficed to cover their actual losses for that period. Hence they have been obliged to rely mainly, for their net earnings and accumulations, upon judicious investments and thrifty handling of their cap. This utilization of their reserve funds, to secure an income from them, not only requires a degree of financial skill and executive ability rarely if ever to be expected in a mere town or State agent, but also a wide margin of discretion, which it is believed could not often be safely entrusted to such an official.

He considers it to be opposed to the spirit of republican inst. that the Gov. should attempt to do what the people can do as well or better for themselves. He also fears that the shutting out of professional skill from the bus., and throwing it into the hands of mere politicians and placemen, would be very disadvantageous:

The results of such a loose and extra-hazardous method of underwriting as would be likely to follow, are not difficult to predict. The State would thus hold out the strongest possible incentive to wholesale fraud and incendiarism. Moreover, these crimes would be encouraged, under such a system, by that lax sentiment of public morality which, as in the case of smuggling or false invoicing by respectable importers, does not scruple to defraud the Government, so boundless in resources, of its dues; while the same persons, as a general rule, are strictly honourable in their private dealings, and would shrink from any dishonest transaction between man and man.

Hence, in order to meet its inevitable losses on the score of incendiarism, bred and born of such a system, the State would either be compelled to raise its prem. rates above the present standard of our private stock companies—thus exploding the delusive idea of cheap State ins.—or it would have to meet this deficiency by falling back upon revenues from other sources. The manifest injustice to the general tax-payers which the latter method would inaugurate would not long be tolerated, since a large class of heavy contributors to the State treasury either do not count among their possessions any insurable property, or that property (suburban residences and farm-houses, for instance) is so secure and isolated in its position, that it would not be fair to tax it for the benefit of such as may be exposed to the dangers of a sweeping conflagration. The fundamental principle of reciprocity, upon which all equitable ins. is based, would be clearly violated by such an alternative.

The Report embodies a letter from Mr. N. C. Nash, of Boston, a gentleman who "has been favoured with special and well-improved opportunity to became familiar with the character and results of ins. administration, both at home and abroad." He advocates at great length Municipal and State Ins., mainly on the ground of securing the profits of the bus. to the insured. The following passages appear to contain the substance of his arguments:

With the facts of the two distinctive fires of Chicago and Boston before us, it must be plain to all who have reflected upon the subject that our whole system of Fire Insurance is false in theory and false in practice. It may answer for marine risks, a class of property never stationary, but not for cities and towns. If we are to have sure safety and protection from losses, the responsibility must be upon the whole people, and not to the uncertainty of close corporations, whose only object is to make money. We now pay more than four times as much for F. Ins. in this country as they pay in England, France, or Germany. All Europe looks with amazement at the vast amount of losses resulting from fires in the U.S., year by year; not, however, confining their observations to the great fires above named, but to the gross amount of all losses, which are estimated to be between one and two hundred millions of dollars yearly. Why is this country an exception to all other countries? It is for the reason that every man builds as he likes and how he likes, with no power of control right or wrong. Would it be possible for such violations of natural and mechanical laws to exist for a month if the responsibilities of fire risks rested upon the municipality of the State?

We think and speak of the two great fire losses of Boston and Chicago as being personal losses. True, the ownership of the property was personal, but nevertheless the losses were national. Millions of the goods destroyed were the products of foreign labour, but, whether foreign or domestic, every cent of property destroyed was just so much abstracted from the productive labour of the country, and the productive labour of the country must bear the loss as truly as if we had been under a national system of mutual insurance, and a national tax had been assessed to pay the gross losses of the two conflagrations, which left no values behind them other than a handful of ashes.

On the other side the Commissioner gives a letter from Mr. Henry A. Oakley, the President of the National Board of Fire Underwriters, U.S.; and also a letter from the present writer. In each of these the present system is upheld, and the tendency to narrow the base of F. Ins. by limiting it to Municipal or State enterprise is deprecated. The Rep. had the effect of laying the ghost of Municipal or State Ins. in the U.S. for the moment.

We place on record thus fully the arguments employed on this and similar occasions—knowing that in the natural course of events this fascinating but delusive idea of State Ins. will again and again come to the front.

In *Russia* the owners of the land provide a system of ins., by means of which the houses of its cultivators, in the villages and elsewhere, are ins. for a small fixed sum, sufficient for re-building and furnishing, in a very simple manner.

It may be useful to point out, by way of conclusion, that State or Municipal Ins. is simply a scheme of mut. ins. conducted by the public authorities without any especial skill or fitness for the bus.; and indeed without much scope for the exercise of skill: *for all the risks have to be insured:* and hence the important underwriting faculty of *selection*—of the power to say "no" in the case of a risk regarded as doubtful, or worse—never comes into play. This appears to us to be one of the chief dangers of State Ins. [FIRE INS., PERPETUAL.] [GOVERNMENTAL INS.]

FIRE INS., MUTUAL.—It is usually asserted by writers upon Ins. that the earliest Fire Ins. Offices in Gt. Brit. were of the Mutual type, but this is not correct. The earliest Co., *The Fire Office* [*Phœnix* No. 1], founded 1680, was a proprietary co. The scheme of the *Chamber of the City of Lond.*, perfected the following year (1681), was on a proprietary basis. The first Mut. F. Office was the *Friendly*, founded 1683. The next Mut. Office was the *Amicable Contributors* [*Hand-in-Hand*], 1696. The *Lombard House*, 1704, was Mut. The *Exchange House* [Povey's], 1706, so far as it had any legal constitution at all, was proprietary. The *Co. of London Insurers* [*Sun*], 1710, was at first of the mutual type, but in 1726 became proprietary. The *Union*, 1714, and the *Westminster*, 1717, were mutual; but all the next succeeding group of Fire Offices were proprietary. [FIRE INS., HIST. OF.]

From time to time a sort of mania for Mut. Fire Offices breaks out, generally with most disastrous results to those who engage in the bus., or trust for protection upon the association so formed.

But it is in the U.S. that the system of Mut. Fire Ins. has found the most favour. The Hon. Wm. Barnes, in his First Ann. Rep. (1860) as Supt. of the N.Y. Ins. Depart. thus expresses himself concerning it:

> Noble and philosophic as the mut. system is in theory, it has often proved in practice to be deceptive and unsound. The numerous Mut. F. Ins. Cos. organized in this State under the Act of 1849 have left a sad record of outrage and wrong inflicted upon our citizens; greatly injured, if not entirely destroyed, the good character of this class of cos. . . .

Mr. Sanford, late Ins. Commissioner of *Massachusetts*, said hereon:

> The *theory* of Mut. is unquestionably the cheapest and best. But the theory bears practical test only so long as the strain comes on one side. So long as the working of the co. results in no losses, all goes well; but as soon as the theory is put to the test by contribution to losses by assessment, the co. is pronounced a failure, and is almost sure to go under.

The subject will be further discussed under MUTUAL INS. ASSO. (*Fire*). See also FIRE INS., MUNICIPAL AND STATE.

FIRE INS. OFFICE COMBINATIONS [Tariff Asso., etc.].—It is sometimes objected by the public, as also by the outside press, that combinations of the Ins. Offices constitute an unfair monopoly as against their clients. That there is no substantial truth in this statement is well known to all who are engaged in the bus.; and it may be inferred from the fact that offices which stand out of asso. do not find that a rush of bus. of the better class is transferred to them at the expense of the combined offices. The truth is that combination in regard to rating—that is, in the formation and regulation of the tariffs—*is a necessity of the bus.*; and while kept within rational limits is for the common good of all concerned. Several of the offices now in asso. were formed with the express intention of operating independently; but found it so impossible to meet the unreasonable demands of their clients, that they were driven into asso.

1791.—The first combination of the Lond. F. Offices occurred this year; but the object was not rating: it was for the equally important purpose of F. Protection. No one objected to this combination—which was obviously for the common good. See FIRE BRIGADES this date; also 1808 and 1825.

1827.—The Fire Ins. Cos. of *New York* were associated together at this date for bus. purposes generally; and especially in view of obtaining adequate rates, etc.

1829.—The managers of the *Scotch* Fire Offices associated together this year for common objects of protection, and general interchange of views. Much of the success of the Scotch Offices we suspect is due to the periodic meetings of their managers. The records of the matters discussed, and of the decisions, are preserved; and are of some value, and of considerable interest.

1832.—Mr. F. G. Smith, then Sec. and Surveyor to the *Scottish Union* Ins. Co., pub. his *Practical Remarks upon the Present State of Fire Ins. Bus.*, etc., in the preface to which is the following:

> . . . It is universally acknowledged, even by the public, as well as by all ins. cos., that the present rates of Fire Ins. are in the majority of cases inadequate.
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> . . . The years I have been connected with ins. cos., both in England and Scotland, have not been spent without observation; and the result is a conviction in my mind, that the Fire Ins. bus. *cannot at any time be made one of profit or emolument, unless some cordiality exists between the different estab. carrying it on, instead of the ruinous spirit of rivalry that has so long unfortunately dictated their proceedings.* See FIRE INS. PREMS.

1833.—The LONDON FIRE ENGINE ESTAB. was founded this year by the Combined Lond. F. Offices. This was only the more complete embodiment of the Asso. first commenced in 1791.

1850.—During this year the 10 Fire Ins. Offices in the U.S. transacting agency bus., viz. the *Howard*, *Long Island*, and *Albany*, of N.Y., the *Franklin*, Pa., the *Ætna* and *Hartford*, of Hartford, and four others which have passed away, "moved by the exigencies of the bus. at that period," united in forming a tariff for the use of all their agencies. This was the first Tariff Combination in the U.S. The necessity for some such step will be shown by statistics to be given under FIRE INS. PREMS. at this date.

1852.—The managers of the leading F. Ins. Cos. in *Germany* held a meeting at Leipzig, in view of forming an asso. for the purpose of common deliberation and association. We believe the design was not then fully matured. [See later in this art.]

1858.—The Asso. of Brit. Fire Offices, usually designated the TARIFF ASSO., was formed this year, after various efforts in the same direction. It was entirely optional for offices to join or not. The representatives of the offices which joined were to meet twice a year, or oftener, in Lond.; while district committees were to meet in Lond.; in Liverpool or Manchester; and in Edin. Great benefits have resulted to F. Ins.—not only to the offices, but to the insured, from the operations of this Asso. At the present moment there are very few offices conducting their operations outside the Asso. From time to time "independent" offices are estab.; but in a few years they usually join the Asso.—or die. (See 1872.)

1866.—The London Salvage Corps. was founded this year. The step had been long in contemplation, but until the offices became released from the active responsibility of Fire Extinguishment in the Metropolis, they were unwilling to increase their outside responsibilities. With the commencement of this year they found themselves free, and the new asso. was forthwith formed by the Fire Offices transacting bus. in the metropolis. Its labours have been attended with the greatest success. It is part of the bus. of the executive officers of the asso. to inspect wharves, docks, warehouses, etc., in view of becoming familiar with the modes of storage of goods, etc., by which means greater efficiency and promptness of action in the event of emergencies is secured. The results of working are reviewed under Fires and Fire Ins., Statistics of. At the close of 1875 there were 42 contributing offices.

During this year also the National Board of Fire Underwriters, U.S., was formed. Of the necessity for its formation, as also of its successful operations, we have already spoken in our gen. Hist. of Fire Ins. (1866 and 1868.)

1869-70.—About this date a Tariff Asso. was formed by the local cos. in *Canada*, in conjunction with the leading British cos. trading there. This asso. was productive of great good during the period of its more active operations. We fear conflict of interests is again tending to lessen, if not destroy, the benefits obtained.

1874.—About this date 14 of the largest joint-stock Fire Ins. Offices in *Germany* entered into a convention for statistical and scientific purposes. Each Co. still retains its own tariff; but views are exchanged on certain points of experience in regard thereto. One good result has already followed, and that is the adoption of a uniform printed pol. and conditions. The asso. at present embraces only about one-half of the joint-stock offices, and none of the mutuals.

1875.—The *Russian* Fire Offices, we believe for the first time, this year formed themselves into a tariff asso.; and are at length taking effective measures to put the bus. of Fire Ins. upon a permanently paying footing.

1876.—The *Ins. Agent* for Jan. this year, in an excellent art. entitled, "What will not burn?" puts the case exceedingly well:

> The tariffs of the asso. fire offices are often attacked as unfair to classes, but they are based upon an extended and costly experience, and in the main are right. They are not mere guesses, but are founded upon the analysed results of actual insuring. They are a broad index as to what is likely to burn, and what is not likely to burn.

Mr. John M. M'Candlish, in his address before the Actuarial So. of Edin. (1872), explained and defended the practice of combination among the Fire Offices as follows:

> In endeavouring to distribute losses according to classes of risks, it has been found necessary by the Ins. Cos. to combine their experience, and to act as much as possible in concert. With respect to a great variety of the more ordinary risks, there exists amongst the offices a common understanding as to what the rates shall be, *although there is liberty for any office to accept lower rates if its conductors think fit*. But with respect to many of the more important descriptions of property, the great body of Brit. Ins. Offices have bound themselves to each other not to charge less than certain rates agreed upon. Tariffs of rates for these risks are adjusted and decided on, and become virtually a law to almost all offices. The "tariff system" is so important to the offices and to the public, that I will endeavour to explain and also to justify it. . . . In one sense this has the appearance of being a gigantic trades union—a league offensive and defensive—of ins. offices against the public; and it needs to be justified both as necessary to the offices and as advantageous to the public. On both grounds it may be justified.
>
> Its main object is to secure remunerative rates of prem. This it endeavours to do by two methods: by an agreement as to what rates are to be charged; and by affixing such a penalty to dangerous constructions, substances, and processes, as to induce, if possible, a lessening of the danger. In other words, and reversing the order, it seeks to diminish the risk of fire, and to secure adequate payment for what risk remains. There can be no doubt as to the benefit the public derive from the former of these. To have pointed out to them, not on the authority of one office, still less on hesitating and contradicting authority; but with all the weight arising from the combined experience of numerous cos., that this or that method of construction, this or that combination of materials, this or that mode of conducting a manufacturing process, is attended by imminent hazard of fire; and to have the lesson enforced by a heavy pecuniary penalty, ought to be of advantage to those, who more intent, perhaps, on their immediate objects, than on the avoiding of this particular risk, must yet in the end suffer from any fire; and must, as we have seen, bear the burden of all fires.
>
> That very great benefit has accrued to the public from this function of the combined offices admits of numerous illustrations. An increase of rates, following heavy losses, drew the attention of the merchants of *Liverpool* about 30 years ago [1842-3] to the defective condition and management of the warehouses of that great entrepot. An Act of Parl. was procured for their better regulation, and the result was an early return to reduced rates of ins.; and an avoidance of those secondary losses and inconveniences arising from fires, against which no ins. can afford entire protection. A few years ago it was discovered that many fires in *Dundee* arose from the doors and windows of flax warehouses being so imperfect that evil-disposed persons could and did set fire to the loose flax which was cropping out into the public ways. The offices as a body required all doors and windows of flax warehouses within 15 feet of the ground to be carefully guarded by sheet-iron. At considerable expense the regulation was universally complied with, and although there was some grumbling at first, it is now universally acknowledged by the flax merchants themselves that a great improvement has been estab. What the offices did was to charge an add. rate where the required alteration was

> not effected. The increased rate became a nullity so far as yielding any add. income to the offices; *but it lessened the risk of fire*, and this was precisely the object which had been aimed at.
>
> In many complicated processes of manufacture: flax, or cotton, or wool-spinning for example, there are parts of the process peculiarly hazardous as regards fire. In particular the first treatment of the raw material is generally attended with this greater risk. The rough and dirty substance has to be smoothed and cleaned, and one common method is to pass it through machines (bearing different names) where it is subjected to the action of steel teeth revolving at a prodigious velocity. The loose dust and small particles of fibre thrown off in this process create a highly inflammable atmosphere, while any fragment of stone or iron which may by accident get among the material may strike against the teeth of the machine and create a spark of fire. The existence of such a process in the heart of a mill adds of course greatly to the risk of its being burned. A high rate charged where such a machine exists induces manufacturers to place it in some detached building, where any fire it may occasion will have little chance of burning the mill. This is only one of many illustrations that might be given. On the supposition that the offices are correct in their estimate of risks, the effect, and indeed the intention, of this rule, is not so much to put money into their own coffers, as to lessen the risk, and to save themselves in the first instance, and the owners of property ultimately, from the consequences of preventible fires.
>
> These rules, as will readily be seen, must have powerful influences on trade and manufactures. Many individual warehouses and mills are, with their contents, ins. for very large sums—£10,000, £20,000, £50,000, £100,000, and more. An add. charge of 5*s*. or 10*s*. p.c. in respect of some supposed increase of risk may mean a payment by the owner of several hundred pounds a year; and may operate as a complete veto on some arrangement or some machine which it might otherwise be desirable to resort to. The occurrence of a few severe fires in one seaport town, followed by an increase of ins. rates, may have, and I believe has had, the effect of driving some branch of trade away to other localities—the seats of greater caution or better fortune! It is therefore obviously desirable that so important an influence should be exercised, not precariously or capriciously, *but according to the combined wisdom and experience of those asso. which may be supposed to understand the subject best, and to obtain their experience in the way which makes it perhaps of most value*—by paying for it.

He next considers the question, with equal ability, from another point of view, viz. the effects of unrestricted competition:

> It is equally for the public benefit that rates of ins. should be fixed on some common scale. This may not appear so obvious at first: for it may be said—Why not allow each man who has property to insure, to make his own bargain, and each co. to take what rates it pleases? Suppose such a system to be tried, the first effect will be a general and great reduction in rates. The spirit of competition sets in, and every office charging a certain rate for any given risk, is exposed to be under-sold by some other office, and so to be deprived of its bus., unless it consents to an equal, if not a greater, reduction in its charge. But it may be said—"So much the better for the insured; if the offices can afford this reduction of rate, it will only be a fair result of competition; if they cannot afford it, and yet are such fools as to take their neighbour's ins., or to keep their own at inadequate rates, let them: they will be the losers, but the public will gain. Will the effect not be simply to reduce the rates to the paying point and no further? When it has come to that point, will not all the offices cry—'Hold! we have gone as far as we can, and here we take our stand'?" This would be all very well if the paying point could be absolutely ascertained or determined in any way beforehand; but the rate comes first and the losses come afterwards. In the mean time all sorts of persons—directors, managers, secretaries, surveyors, agents—are interested to get or to keep bus. Many of these persons are interested directly only in the bus. being got or kept, and have little or no interest in whether it is profitable or the reverse. Even where they are personally interested in the results, or where a high conscientiousness raises them above that question, they are open to the influence of hope. They know, perhaps, that the rates offered them will not be adequate if future losses are like the past; but they are sanguine that better times may perhaps be coming. The prem. in hand is a present good: the losses may or may not follow—who can tell? They are like the wild cat in the French fable, who finds a telescope in the field, and looking through one end sees his prey close at hand, and looking through the other, sees the hunters who are pursuing him, at a great distance. In other bus. prices are based upon some certainty as to the cost of production. A man may be compelled to sell his iron, or his yarns, under exceptional circumstances, at a price below what they have cost him; but if he does this, he knows he is doing it, and if he does it habitually, he cannot conceal from himself that he is hastening on to bankruptcy. *But in selling F. Ins. we do not know the cost until long after we have sold it.* In a free competition it is the sanguine man's views which will regulate the market price. If he is selling protection at 5*s*. p.c., I cannot expect to get 10*s*. for it,—however certain I may feel that unless all experience is in vain 5*s*. is far too little; and I must accept 5*s*. and make up my mind to loss, or go out of the bus. altogether.
>
> But I may do more than this. If I have large funds behind me, and my sanguine competitor, as is prob., has not a great deal to lose, I may proceed to outbid him again, and offer to do for 2*s*. 6*d*. what he wishes to charge 5*s*. for. I know I shall lose, but I know that he must lose also. I can stand losses, and he cannot. I will drive him off the field, and then recoup myself by charging what rates I please. This is one inevitable consequence of reckless competition. Some offices disappear altogether, others take fright in time to avoid utter ruin, though not to escape serious losses; persons who might otherwise estab. new offices are deterred from doing so; the bus. gets the character of being a highly speculative and hazardous one, requiring extravagant profits to induce men to carry it on at all; and the public have to bear the cost. As has some time ago been indicated, it is to the advantage of assurers that there should be many sound and prosperous offices ready to accept their bus.; whereas the effect of free and unrestricted competition is to reduce the number of such offices, and to infringe on the soundness of those that remain.
>
> The combination we are considering has another effect which is also to the advantage of the public—*it serves to distribute the burden of losses fairly*. If it is a just thing that cotton-spinners should bear all the losses that arise in cotton mills, and not leave them to be borne by the owners of private dwelling-houses, or *vice versâ*, it is well that the loss by each class of risks should be measured fairly. But the experience of any one office, even the oldest and largest, taken by itself, furnishes a very imperfect criterion; and it is for the general advantage that the cost of ins. should be altered as regards any class of risks *only when there is an overwhelming concurrence of experience as to the justice or necessity of the alteration.*

But he very justly points out also *that the power of combination is limited:*

> On the other hand, it is beyond question that no asso. of the kind will ever hold together a large body of independent sos., except under the pressure of some necessity. No conventional or excessive rates can be maintained for any length of time. Some member of the union is sure to perceive that popularity and profit may be gained by introducing a lower rate, if a lower rate is manifestly sufficient; or a new co. starts into existence to remedy the grievance. It is to be remembered, too, that the directors who control the office are likewise insurers—quick to raise the question of how far

the rates they have to pay as individuals are justified by the risks run; and if it cannot be shown that these rates are a true measure of the risk, offices are soon constrained by a sense of justice, or by self-interest, or by pressure from without, to mitigate them. *In short, the asso. is a union bound together by necessity, and tempered by competition.*

It were well both for the offices and the public if the competition operated only in the way I have been describing. Unfortunately, the keen contest for bus. sometimes leads to less open and creditable means of procuring it. The engagement under which the offices lie to each other, to charge certain rates and no less, is occasionally overlooked or evaded; and an office honestly charging a tariff rate finds that its pol. are dropped, and that its clients have insured elsewhere on easier terms. Such cases prob. have their origin in the over-zeal of subordinates; but if that were always discouraged, and heartily blamed at head-quarters, as it ought to be, they would not occur so often. They injure the offices, and are of no benefit ultimately to the insured. But considering the prodigious difficulty of sustaining an agreement on so great a variety of points among so many independent and rival institutions, the wonder is, not that tariffs are sometimes broken, but that they are observed at all. Necessity alone can account for it. Similar arrangements exist in the U.S., in Canada, and in other countries. But while self-interest—almost self-preservation indeed—must be the ultimate *motif* of such asso., the F. Ins. Cos. of the U.K. have a rule which makes it extremely difficult for offices to exist outside their union. They have agreed that they will have no re-insurance dealings with such offices; and the consequence is that non-tariff cos., if they continue to exist at all, find themselves, sooner or later, compelled to join the asso. This, however, would not produce the desired effect if such offices did not find that they were acting rashly in dissenting from the gen. body in the matter of rates. The asso. has the best possible means of judging what the terms ought to be; and it is certain that if non-tariff offices are ever allowed to carry off the bus. of others at reduced rates, it will only be where the reduced rates are most unlikely to be remunerative. They get, therefore, the worst risks at the worst rates, and sometimes not much else; and if they are able to hold out at all, they are glad, ere long, to seek admission into the tariff system.

On the whole, we think a strong case has been made out in favour of combination among the Fire Offices for the purposes of their bus.

FIRE INS. OFFICE MARKS.—The affixing of marks or plates to houses and buildings insured dates from a very early period in the history of Fire Ins. It has been sometimes assumed that the object was that of advertising particular offices—and no doubt in later times that view has been acted upon. It has also been assumed that the "marks" would operate to prevent incendiarism, in times of political excitement and popular commotion, as indicating that the loss following upon destruction of premises would not fall upon their owner or occupier, but upon the ins. co.; and during the "Gordon" and other riots this belief has been realized. But the origin of the custom of plates or marks is not to be traced as arising from either of these circumstances, as will be learned by what follows.

1684.—The "*Friendly* So. for Securing Houses from Loss by Fire," established this year, had the following regulation: "XVII. To prevent any fraud in getting any pol. by indirect *means after a house is burnt,* no house is to be esteemed a Secured House *till the mark hath been actually affixed thereon.*"

1696.—The *Hand-in-Hand* regulations provided that no house, chamber, or rooms was to be deemed insured until the mark of the Contributionship was placed thereon.

1708.—In Mr. Povey's *Exchange House* scheme under this date, the practice of marks is carried further. Each mark was to have on it the number of the pol.; and if the insurance ceased, the mark was to be taken down. As a rule, the marks are not taken down; and there are numerous houses in Lond. and the country having as many as 5 or 6 marks attached.

1710.—The *Sun* Fire announced that every person insured should have a mark affixed upon his house "gratis."

In our art. FIRE INS., HIST. OF, will be found many references to F. OFFICE MARKS.

In a poem in the *New Tory Guide,* pub. during the last century, *Par Nobile Fratrum,* written on the occasion of the departure of the "par nobile fratrum" Lords Castlereagh and Stewart for the Continent, there occurs the following stanza:

> For not e'en the Regent himself has endured
> (Though I've seen him with badges and orders all shine
> Till he looked *like a house that was over-insured*)
> A much heavier burden of glories than mine.

1809.—In the proposals of the *Albion* F. and L., dated 25th March this year, was contained the following unusual announcement:

> It is not the practice of this office to affix any marks on buildings. It is known that such marks are used only as a mode of adv. They continue on buildings many years after pol. have ceased; and afford no guide whatever to the firemen of any co. to regulate the attention they might show to persons really insured. The Co. trusts that its conduct and character are sufficiently popular to remove the necessity of any such species of adv.; and as the firemen of the Co. are enjoined to render the utmost assistance to all who need it, the security of persons insured will in no respect be diminished by the disuse of this superfluous appendage.
>
> As the messengers of the Co. are not put to the trouble of fixing marks, they are forbidden taking fees on delivery of pol., *as hitherto practised.*

Among the various marks now seen upon the houses are those of the following offices: The *Sun,* a sun; *County,* a figure of Britannia seated; *Yorkshire,* York Minster; *Leeds and York,* Lamb and Fleece; *Notts and Derby,* an heraldic shield; *West of England,* a fire engine; *Royal,* simply the name of the co.; *Queen,* ditto.

On the Continent of Europe, ins. office marks are very general, especially in Switzerland.

Fire Ins. marks were used in the U.S. during the last century. A correspondent to *Notes & Queries,* 14th Aug. 1875, speaks of a fire badge found on the wall of an old house in *Philadelphia,* "which was unlike those in use by the oldest cos. in this city;

and which is supposed to be that of some English co. in existence before our revolutionary war. The badge is of iron, more than a foot high, almost a foot broad, with the representation, in a raised figure, of a hand engine. Below are the letters 'F.I.Co.'" We do not trace the identity.

FIRE INS. OFFICES, FOREIGN.—The advent of Foreign Fire Ins. Cos. into Gt. Brit. in 1856, in view of evading the infliction of the Gov. duty then charged, has been fully adverted to in our art. FIRE INS., HIST. OF, under that date.

Of late years, more especially since the abolition of the duty on Fire Ins. (1869), the influx of Foreign F. Ins. Co. has been considerable, and increasing. [FOREIGN INS. ASSO. IN THE U.K.]

FIRE INS., PERPETUAL.—The question of Perpetual Fire Ins. comes before us in several forms: 1. In regard to State or Municipal Ins., where the ins. being compulsory, neither party has the power of discontinuance, therefore the contract is a continuing one. 2. Where the prem. is paid down in one sum, and a contract is issued which is to continue in perpetuity, *i.e.*, so long as the property insured shall last. It is this latter contract which we propose more particularly to consider here: the former has been generally dealt with under title FIRE INS., MUNICIPAL AND STATE.

1681.—When the Chamber of London perfected its scheme of Fire Ins. this year, its scale of prems. not only ranged from 1 to 100 years [1 year 3*s.* 9*d.* per £100; 100 years £3 6*s.* 8*d.*], but it added "£4 p.c. *for ever*:" this was for brick buildings; for timber the rates were double. The *Fire Office* of the preceding year had not ventured beyond 31 years. This plan of insuring at 4 p.c. "for ever" would have been found to pay well, as the int. on that sum would more than pay the prem. on all ordinary buildings, leaving the deposit to form the Perpetual Ins. Fund. We suspect that but few of these perpetual policies were issued; and they were soon cancelled, under the circumstances already stated. [FIRE INS., HIST. OF.]

The offices which were next founded did not put forward the feature of "Perpetual Ins." In the case of some of the mut. asso. there was indeed embodied the idea of Perpetual Ins. The pol.-holders paid down a "deposit" when the pol. was issued, the interest upon which under favourable circumstances would provide the cost of ins.; but the insured were always liable to the risk of "contribution" in the event of undue losses; and on the other hand any member might at the expiration of any year [or quarter] terminate his ins. and receive the return of his deposit. Here there was no contract of Perpetual Ins.

1720.—The *Friendly* Ins. Co. of Edin. was estab. upon a complete "plan of perpetual ins." The insured paid a certain small per-centage on the *value of the property at the time of the ins.*—as ascertained by a valuation made by the Directors of the Office. The liability to contribute, as also to parti. in profits, was inseparably annexed to the houses, tenements, etc., insured. [FRIENDLY FIRE INS. SO. OF EDIN.]

1763.—The *Contributionship for the Ins. of Houses from Loss by Fire*, founded in *Philadelphia*, 1752, this year commenced to grant pol. of perpetual ins. after the plan of some of the early mut. sos. in Lond., viz. in consideration of a deposit paid down, and a small ann. contribution afterwards. This So. has insured a very large amount of risks on this plan; and many other fire offices have been chartered upon the same plan in the State of Pennsylvania. (See 1873.)

1794.—There was founded at Richmond, Va., the *Mut. Assu. So. of Virginia*, which presented some modifications from the plans already stated. The founder of the So. was Wm. Fredk. Ast, a Prussian, and it "was supposed to be modelled after a system of *mutual guarantee* introduced by Frederick the Great." The insured paid a prem. at the commencement of the ins., and executed a "declaration" under seal, by which he pledged the property insured for the payment of whatever requisitions might be necessary to meet losses by fire or lightning. The Asso. in return issued a *perpetual pol.*, which followed the property through successive changes of title, and could only be terminated by formal withdrawal; the destruction of the building; the *storage therein of prohibited articles*; or the taking out of other ins. upon the same property. The property was valued every 5 years, and ins. allowed up to four-fifths of the value. If the owner insured for a less sum, he was held to be a co-insurer. After the first prem. "the quota" only was paid annually afterwards. The Asso. still exists, and covers a large amount of ins. in the State of Virginia.—Griswold, *Fire Underwriter*, p. 200.

The following is an early form of pol. issued by this Asso. We put the special points in *italics*:

No. 585. This pol. of assu. Witnesseth that . . . . of . . . . hath entered the building herein mentioned for assu. from loss or damage by fire, in the Mut. Assu. So. against Fire on Buildings in the State of Virginia, as per h— declaration dated the . . . . day of . . . . 17—, marked No. —, and filed in the office, to wit: A . . . . marked . . . . the walls built of . . . . covered with . . . , situate in . . . . now occupied by . . . . in the county of . . . . , the particulars of the situation. dimensions, and building are as by description No. 289, which -he has deposited in this office, and valued at . . . dollars: deduct . . . dol. [one-fifth of value]; remain nett . . . dol., which said . . . dol. is the real sum insured, and on which -he has paid . . . dol. prem.; and . . . . dol. *for tax on the pol.*; and the said . . . . having agreed to abide by. observe and adhere to the constitution, rules and regulations of the said So., as already or may hereafter be estab.

Now know all men by these presents, That the said Mut. Assu. So. shall after this day be subject and liable to pay immediately after due proof, agreeable to the form estab. by the said So., that the fire actually happened unto the said assured, or to . . heirs, exors., admors., or assigns, all such damage or losses (not excepted against by the constitution, rules, and regulations of this So., and by this pol.) as shall happen by fire or lightning to the property above mentioned *for ever, to any amount above 3 p.c. on the amount insured on said building*, and not exceeding the sum of . . . . dol.: Provided always, that the said building is at this instant in existence; and in case of partial loss the said . . . . shall be paid such part thereof in proportion to the sum insured thereon, and shall bear such part in proportion to the sum he runs the risk on himself, under the limitations aforesaid; *but what may be saved of any building hereby insured, is to be valued, and the amount shall be divided between the insured and the So., according to the sum insured, and the sum on which the said . . . . runs the risk himself;* but in case of a total loss, the said . . . . shall be paid in full, as far as the sum insured goes. *And that the said building shall be valued at the end of every 7 years according to the rules and regulations of the So.; and in case of loss after the expiration of the first 7 years, the said . . . shall be paid according to the last valuation, not exceeding the said sum of . . . dol., nor four-fifths of the septennial verified valuation:* And that the stock security and funds of the aforesaid Mut. Assu. So. shall not be liable to make good any loss or damage by fire occasioned by riots, civil commotions, or insurrections, invasion of foreign enemy, sieges, or other military or usurped force, *or hurricanes, or earthquakes, or in cases where it is proved that the proprietor of the said building insured did wilfully occasion the fire directly or indirectly:* Provided also, that the members of this So. *are not to be liable in case of loss further than they are made so by the Acts of Assembly constituting the said So.* In case that the building herein mentioned has been already or shall be hereafter insured by any pol. issued from this office, or by any agent for this office, or any other ins. co., *or by private insurers;* such other ins. must be made known to this office, mentioned in or endorsed on this pol., *and such sum or sums, including what is insured in this Assu. So., must not exceed in all, four-fifths of the verified value of the said building*, otherwise this pol. to be void. In witness, etc. Signed, sealed, etc. N.B.—*The prems. may, if found necessary, be raised by any subsequent general ann. meeting. This it will be found is provided for in the law of incorp. under the denomination of quota.*

The form of re-valuation pol. was as follows, the form we give being however of later date:

No. 4298. This pol. of assu. (for the re-valuation of the buildings declared for per former declaration No. 1583) Witnesseth, that . . . . residing at . . . . in the county of . . . . has entered into assu. against loss or damage by fire, in the *Mut. Assu. So. against Fire on Buildings in the State of Virginia* (for the Towns) [the offices in the *Towns* were subject to different legislative provisions from those of the *Country*] as per his declaration No. 4298 filed and recorded in the general office, the following buildings occupied by . . . . in the said town of . . . . in the county of . . . . to wit:

Buildings used as	Marked	The walls built of	Covered with	Valued at	Nett amt. insured.		Premium.		Burnt, trans., withdrawn, pulled down, or removed.
					Dols.	Cents.	Dols.	Cents.	

[Details filled in this schedule.]

Which sum of . . . . dol. is the real sum insured, and on which there has been paid . . . . pol. prem.; and *now this day* . . . . *add. prem.*; and he the said assured having by the above-mentioned declaration, agreed for himself and his heirs, exors., admors. and assigns to abide by, observe and adhere to the constitution, rules, and regulations of this So., which are already or which may be hereafter established for the said Assu. So.

Now know all men by these presents, that the aforesaid Assu. So. shall be subject and liable to pay, agreeable to the Acts of the Legislature of Virginia, and the constitution, rules and regulations which are already, or may hereafter be established for the said Assu. So., unto the said assured, or his heirs, exors., admors., or assigns, all such losses or damages as shall happen by fire or lightning after sunset of this day to the above-mentioned building according to the true intent and meaning of the said Acts of the Legislature of Virginia, and the constitution, rules, and regulations of the said So. aforesaid: *Provided that the aforesaid buildings are at this instant in existence*, and that if they or any part thereof are or hereafter shall be insured elsewhere, this pol. shall be void. In witness whereof the principal agent of the said So. has signed this present pol. with the seal of the office annexed (the same having been countersigned by his chief clerk) at the City of Richmond this . . . day of . . . 1822.

1871.—The *North America* Fire of *Boston*, U.S., had issued perpetual pol. to a limited extent only. Its deposits held in connexion therewith at this date amounted to 11,659 dollars. (See 1875.)

1872.—Mr. Griswold, in his *Fire Underwriter's Text-Book*, pub. this year, enters into the subject of Perpetual Ins. in some detail, and with a practical knowledge of its bearings. He says, "Perpetual Ins. is, as the term indicates, continuous ins., without limit as to time, *upon the payment of a single prem. or deposit*, the amount of which is usually fixed at about 10 ann. prems. for the same risk." He proceeds:

The rate for the permanent ins. of first-class brick dwellings in the city of N.Y. is 2½ p.c., and for other buildings more in proportion. The basis of the prem. or deposit, as an indemnity, *rests entirely upon the accumulative principle, by compound int., as in life ins.*—the interest furnishing the funds for expenses and losses. This deposit is based upon the supposed average of many years at compound int. It is cheaper to the insured than term ins. The cost to the underwriter is about the same, though usually not adequate at the commencement, except under unusually favourable circumstances: but it becomes remunerative by a length of time. Upon cancellation of the pol. by the insured, *the deposit is returned less a deduction of 5 p.c.*, which is regarded as a fee. If the cancellation is made by the co., the deposit is returned in full.

Perpetual pol. are issued only on selected risks—brick or stone buildings—dwellings preferred; or upon ground rents, mortgages, or other liens upon such property. Frame buildings are never so insured. In case of *total loss* of the property insured, the pol. is thereby cancelled, on payment of such loss. In cases of *partial loss*, the amount paid for such loss is deducted from the amount insured, as in term pol.; but the *deposits*, or so much thereof as may be necessary to pay such partial loss, is sunk for the benefit of the co. . . .

It may be found safe and profitable for cos. having large capitals and heavy cash reserves to practise perpetual ins.; but it would be a very dangerous undertaking for a co. with small cap., which would be liable at any moment to re-enact the experience of the late *Enterprise* Ins. Co., with the same results.

It is understood that the Brit. Cos. trading in the U.S. issue pol. of perpetual ins.

The form of pol. now in use in the U.S., with the conditions attached—and which latter contain some peculiarities worthy of notice—is as follows:

The pol. of insurance witnesseth that the . . . . Ins. Co. of . . . . have received from . . . . of . . . . , the sum of . . . . dol., deposit money to indemnify the said . . . . for all damage or loss (not exceeding the sum or sums hereinafter recited) which may hereafter happen by reason or by means of fire, to the property herein described, viz. . . . . [Here describe the property.] In conformity with, and upon the faith of survey No. . . signed by the assured . . . . and filed in the office of the said Co.

Now know all men by these presents, that in consideration of the premises, the cap. stock, estates, and securities of the . . . . Ins. Co. of . . . . shall be and remain for ever subject and liable to pay and make good and satisfy unto the said . . . . heirs, exors., admors., or assigns in the manner and subject to the terms and provisions specifically set forth in the conditions of the said Co. hereunto annexed, which are expressly made a part of this contract of ins., all such damage or loss to the property hereinbefore described, not exceeding in the aggregate the sum of . . . . dol., which may hereafter happen by reason or means of fire.

The *Conditions*—special points being marked by *italics*:

I.—Persons making perpetual ins. with this Co. on a building or on any ground rent or mortgage interest in respect thereto, shall deposit a certain sum for every 100 dol. so insured, according to the greater or less hazard of the building or its occupancy; *and shall pay for this pol. and for surveying the building not less than 3 dol.*

II.—A survey of the building to be insured, or in respect to which ins. is to be effected, shall, if within a convenient distance from the office of this Co., be made by a person employed by them; and shall be signed by the applicant; and in case the building is not convenient to an agent of this Co., the survey shall be made at the expense of the applicant, by a competent person, who shall make oath or affirmation to the correctness thereof, before some magistrate of the district in which the building is situated, which survey shall also be signed by the applicant.

III.—[Increase of risks as in the ordin. pol.]

IV.—All such ins. shall be subject to the express condition that a marketable title can be shown to the premises, and that the mortgage, lien, or ground rent is the lien or first incumbrance thereon, unless otherwise expressed in this pol. [This section also includes the mortgage clause with subrogation, as customary.]

V.—Where the pol. issued to the owner of a building shall be duly assigned to the holder of a mortgage or ground rent thereon, as collateral security, *no subsequent breach or non-compliance with these conditions by the owner of the building, without the knowledge of such assignee, shall avoid the ins., so far as the interest of the latter therein shall be concerned*; but in case of any subsequent breach or non-compliance, the ins. shall thenceforth stand in all respects as though originally effected on such mortgage or ground rent specifically, and be subject to all the stipulations and provisions contained in condition IV. of this pol.

VI. This pol. shall continue in force for *so long a time as the deposit money shall remain with this Co.* (subject nevertheless to the other parts of these conditions); but any person assured, being the owner or proprietor of the building, ground rent, or mortgage insured, and also the holder of this pol., *may at any time reclaim the deposit money, which shall be paid within 3 days after demand*, subject to a deduction of 5 p. centum; *but in case of sale or assignment of the property insured, if the deposit money be not demanded within 60 days after the sale, it shall be considered as sunk for the benefit of this Co.*

VII.—This Co. may at any time and in all cases terminate the ins. and cancel this pol., after giving 30 days' notice of their intention to do so; and at the expiration of the said 30 days the ins. shall cease, *and the deposit money shall be returned without deduction*, on the surrender of this pol. to the Co.

VIII.—Where the property specifically insured hereby shall be sold, this pol. shall be void, unless assigned to the purchaser at the execution of the deed; and in such case, and also in case of any assignment of this pol. as collateral security for a ground rent, mortgage or other lien on the premises insured, *such assignment shall be brought to the office of the Co. for approval within 30 days thereafter, or the pol. shall be in like manner void.* The Co. retain the right to approve an assignment, or not, at their option; in the latter case the deposit money shall be returned without deduction on surrender of pol. *For every approval of an assignment there shall be paid 50 cents.*

IX.—Upon the death of the assured this pol. shall be held by his exor. or admor. in trust (except in the case of a mortgage or other lien as aforesaid) for his heirs or devisees; *provided that within the space of 12 months thereafter, such executor or administrator shall give due notice to the co. of the names of such heirs or devisees, and the extent of their respective interests in the property insured:* which shall then be endorsed on the pol. by way of declaration, but subject to the approval of the Co. as in the case of assignment; *and the same shall be done in case of any subsequent change of ownership of the property insured, so long as the pol. shall be held by such exor. or admor.* Any assignment of the pol. thereafter made by such exor. or admor. shall be only to or with the concurrence of the persons named in such declaration.

X.—Unless notice of all other ins. on the property specifically insured by this pol. be given by the assured, and endorsed on this pol., or otherwise acknowledged in writing by the Co., this pol. shall be void. The Co. shall be liable only for such rateable proportion of the damage or loss to the building insured, or in respect to which ins. is effected, as the amount insured by this Co. shall bear to the whole amount insured on the specific interest, without reference to the dates of the different pol., or to the solvency of the Co. issuing them; and in no case for more than the amount so insured by this Co. Where the ins. is on a ground rent, mortgage, or other lien, there shall be no liability to contribute to any ins. directly made on the premises mortgaged or charged.

XI.—In case of damage or loss by fire, the assured shall give immediate notice thereof to this Co. and produce this pol., together with a statement of the other insurances, if any; and as soon as possible thereafter shall furnish an estimate of said damage or loss, made in detail by a competent person, under oath or affirmation, when the Co. shall, if the ins. be made directly upon a building, *within 20 days give directions to repair the same;* or shall, if the loss be less than the sum insured, within 30 days; or, if it amount to the sum insured, within 90 days after the amount shall have been agreed upon by both parties or otherwise ascertained, pay the estimated value thereof. Where the ins. is on a ground rent, mortgage or other lien, the amount for which this Co. shall be liable shall be paid within 90 days after it shall be agreed upon or ascertained as aforesaid.

XII.—When a partial damage or loss has been paid or repaired by the Co., *the property shall hereby remain insured for the bal. only of the orig. sum insured; and the deposit money for all damages or losses paid or repaired shall be considered as sunk for the benefit of the Co.;* and in case of total damage or loss, this pol. shall be surrendered to the Co. to be cancelled, on the payment or repair of such total damage or loss.

XIV.—*Glass over the cost of plates containing* 3 *square feet, wall paper and bordering over* 50 *cents per piece, decorative painting, stucco work, fancy flooring, and ornamental stone or iron work, over the cost of plain painting, plastering, flooring and stone or iron work, are not included in this pol., unless specified.* Nor is this Co. liable for damage by lightning or explosion of any kind, except from fire consequent thereon. . . .

XVII.—*Buildings intended to be occupied otherwise than as private dwellings will require a larger sum to be deposited, according to the greater or less hazard of such occupancy;* this pol. will not, therefore, be construed to cover any such increased hazard, unless liberty be given therefor, and endorsed on the pol., in conformity with the subjoined classification of hazards. . . .

Form of receipt upon cancellation: "Received . . . 18 . . . dol., which with . . . dol. retained is in full of the within deposit. This pol. is now cancelled."

Mr. Griswold adds the following remarks, bearing upon the finance of fire ins. offices issuing perpetual pol.:

> Perpetual ins. deposits cannot be divided out in any shape; they must be invested in convertible securities, as the deposit is liable to be called for at any moment, and is to be refunded at 3 days' notice: hence only the int. can be used as dividends. The result is that the co. is, like a bank, subject to a "run" by its depositors, upon the slightest alarm, as recently [1871] happened to a co. in Philadelphia, whose depositors became alarmed in consequence of the "Chicago Fire"; and the result was the closing of the co., as its investments were not in a shape to meet the sudden call without heavy sacrifice.

The *American Exchange and Review* offered the following obs. on this incident:

> That withdrawable deposits for perpetual fire risks—an incongruous union of ins. and trust bus.—is wrong in principle, was long ago declared; that an office is likely to be run upon like a bank in specie paying times, is an old warning; *yet practically this mode of ins. has been attended with such advantages that all objections to it seemed visionary.* That to place the indemnity fund of the insured subjects within the jeopardy of a common fire contingency . . . is not the perfection of ins. wisdom, may be readily conceived; yet the plan has built up some of the most respectable Philadelphia fire offices. . . . The enterprise goes under a prospective demand, reclaiming perpetual deposits—the forbearance of a part of the perpetual pol.-holders not being seconded by others; *and so the heretofore practical security of the system is greatly undermined*, and what was before conjecture is now fact.

1873.—It was found that in the State of *Pennsylvania* this year there were 26 Joint Stock Fire Offices transacting so-called Perpetual Fire Ins. These cos. carried an aggregate of 217,633,955 dols. risk; the deposits thereon being 4,963,043 dols. The largest amount of risk carried by any one co. being 77,885,041 dols. We have seen that the system was introduced to the State in 1752. (See 1875.)

The *Ins. Agent*, Oct. 1873, speaking of "perpetual ins. at uniform rates," said, "The wisdom of this class of ins. in the interest of the cos. has been very properly called in question. If the rates on the particular class of property insured go up, the pol. is pretty certain to be kept in force. If they go down, it would be exceedingly difficult for the office to enforce the collection of the prem."

The *Insurance Reporter* of Philadelphia suggested that *furniture* was more suitable for perpetual ins. than *buildings*. We think the proposition is open to doubt.

1875.—The *Crown* Fire founded this year announced: "The directors have determined to offer facilities to the public to effect *Permanent* Ins. by single payments on such classes of risks as they may, at their option, consider advisable to accept; and they anticipate this mode of insuring will meet with considerable success, *and in a great measure remedy an inconvenience frequently caused to the insured, by ordinary pol. being allowed inadvertently to lapse.*"

Application was made to the Gen. Court of *Massachusetts* early this year, to give the Fire Cos. incorp. in the State the right to issue perpetual fire pol. Regarding this application, *The Index*, in a well-written art., offered the following obs.:

> If the asked-for law is passed in Massachusetts, it will be, of course, of a general character, under which any joint-stock co. of the State may act. There then come up two questions for consideration: (1) the advisability of granting the permission; and (2) the wisdom of doing bus. under the system. As to the first there can be no doubt. It is asked for permission to do a kind of bus. recognized as wholly legitimate, and, in many cases, undeniably serviceable to the public. The request ought, therefore, to be granted. On the second question there is wide room for discussion.
>
> The experience of the *Pennsylvania* companies has, as a whole, been highly favourable. *But there is, attending this system of bus., one danger which should be well looked to before judgment is passed.* That is, the liability to which the co. is exposed in the event of a panic or of any sudden alarm of a "run," similar to that to which savings banks would be exposed, unless proper precautions were taken against it. So long had the bus. gone on prosperously that it had come to be generally believed that this danger was purely imaginary, until the Chicago fire, and the subsequent "run" upon the *Enterprise* Ins. Co. of Philadelphia, resulting as it did in its bankruptcy, proved the contrary. . . .
>
> *But if the system is to come at all into practice in this State, there ought certainly to be determined speedily and authoritatively, the exact status of the deposits made with the cos. for perpetual ins.* Thus much is determined, by practice and the conditions of such pol., that the deposit, less 5 or 10 p.c., as the agreement is made, is reclaimable by the depositor at any time during the solvency of the co., on notice of the intent to withdraw being given, generally 3 days beforehand. But as to the status of such deposits in the event of a co. being bankrupted by a great fire, nothing is definitely determined. If, even in this case, these deposits are preferred claims, entitled to liquidation in full, whatever proportion the co. may be able to pay to its other creditors, it is evident that in all transactions, statements, etc., of the co., they ought to be kept distinct, and for such keeping distinct the law ought carefully to provide,

The consideration in a measure is involved in Municipal and State Fire Ins., already discussed. See also Fire Ins. for Years or for Lives.

FIRE Ins. Policies.—In view of further elucidating the Contract of Fire Ins., as well as for convenience of reference, we propose to present to the reader a series of the forms of pol. from time to time in use by the Brit. Offices: as also the American, French, German, and Colonial forms. The student will not find his time lost in making himself familiar with the distinct characteristics of the several forms presented. This art. should be read in connexion with Fire Ins., Conditions of; and Fire Ins., Contract of.

1681.—In our hist. of Fire Ins. we have shown that the scheme of the Chamber of London was perfected this year. This scheme embodied the issuing of pol. for terms of years from 1 to 100, and also "for ever." Whether distinct forms of pol. were issued for the term ins., and for the ins. in perpetuity, we do not know; we suspect there were separate forms. The following is the "perpetual" form, and, so far as we know, it is the oldest Fire Pol. in existence.

This Indenture made the . . . . day of . . . . in the . . . . year of the reign of our Sovereign Lord Charles the II. of Eng. Scot. France and Ireland King Defender of the Faith etc. and in the year of our Lord Christ 168- Between the Mayor and Comonalty and Citizens of the City of London of thone part and . . . . of the other part Witnesseth that the said Mayor & Comonalty and Citizens In consideration of the sume of . . . . of good money to them paid by the said . . . . at and before thensealing and delivery hereof Have contracted and agreed with the said . . . . h— heirs and assigns. To insure to h— and them the payment of the sume of . . . . in case a certain messuage situate in . . . . in London (and the like sume of . . . . when and as often as any new messuage or Building which shall be erected in the place thereof shall at any time or times hereafter happen to be Burnt down, Blown up pulled down or otherwise Demolished by or by occasion of Fire) and in case the same shall only be damnified in part by or by occasion of Fire then and so often to Repair such Damnification or to pay the like sume of . . . . in lieu thereof In pursuance of which contract The said Mayor & Comonalty and Citizens do for them and their successors covenant and agree to and with the said . . . . heirs and assigns That in case the said messuage (or any new messuage or Building to be erected in the place thereof) shall at any time or times hereafter for ever be Burnt down Blown up Pulled down or otherwise Demolished by or by occasion of Fire That then and so often the said Mayor & Comonalty and Citizens or their successors shall and will pay or cause to be paid unto the said . . . . heirs or assigns within the space of Two Moneths next after such Demolishment the sume of . . . . of lawful money of England And in case the said Messuage or any such new Messuage to be erected in the place thereof shall be only in part Damnified by or by occasion of any Fire which shall hereafter happen That then and so often the said Mayor & Comonalty and Citizens or their successors shall and will at their own costs and charges within Three Months next after such Damnification happening from time to time as often as any occasion shall be Repair and put the said Messuage so Damnified and every part thereof in as substantiall condition and plight as the same was or were before the happening of such Fire Or in default thereof at the end of the said Three Months shall and will pay or cause to be paid to the said . . . . Heirs or Assigns for the Repairing thereof the sume of . . . . Which moneys so to be paid the said Mayor Comonalty and Citizens do by this present Instrument under their Comon Seal Order and Appoint the Trustees for the time being of their Lands and Rents in London Middx & Surry settled for Insuring of Houses in cases of Fire to Pay accordingly in performance of the Trust in that behalf Reposed in them and of the true intent and meaning of these presents And for y^{e} preventing of all Questions & Differences which may happen touching this matter It is declared and Agreed by and between the said parties hereunto That whensoever the Roof and Floors from the first Floor upwards of the said messuage (or of any new messuage to be erected in the place thereof as aforesaid) shall be Burnt down or Blown up or by occasion of Fire shall fall in The same messuage in such case shall be accounted Demolished, and the said sume of . . . . become thereupon payable without further question or debate concerning the same but the Description aforesaid is not to be exclusive of any other case wherein the premises shall happen or may be taken to be Burnt down or Demolished And the said Mayor Comonalty and Citizens do for them and their successors Covenant and agree to and with the said . . . . Heirs and Assigns That they the said Mayor Comonalty and Citizens and their successors shall and will at any time or times hereafter upon the surrender of this present Instrument or Policy by the said . . . . Heirs and Assigns to be made voyd and cancelled Make and grant a new Instrument or pol. of like form and effect herewith to the said . . . . Heirs and Assigns who shall make such surrender without other consideration than the officers fees at Two Shillings and Sixpence per pol. only for making the same. In witness whereof to one part of this Indenture remaining with the said . . . . the said Mayor & Comonalty and Citizens have caused their Common Seal to be put, and to the other part of the said Indenture remaining with the said Mayor and Comonalty and Citizens the said . . . . hath put . . Hand and Seal the day and year first above written.

On the back of the deed before us there is a written receipt for £4 8*s*., "the contents of the within pol." The pol. was No. 74; the sum insured £110—which brings the prem. out at £4 p.c. The pol. is in the form of an indenture under seal, executed in duplicate, one part being retained by the Corp. and the other handed over to the person insured.

1696.—This year there was founded the *Hand-in-Hand* Fire, under its early name of the *Amicable Contributors from Loss by Fire.* This was a mut. asso.—not the first of its class, but the earliest of the present survivors of that class; and as such its pol. possesses considerable interest. We have reason to believe that the following is not a copy of the first form used; but that it embodies all the more substantial features is, we think, clear:

This Instrument or Policy Witnesseth That . . . . having agreed to become a Member of the Amicable Contributionship or So. commonly called the *Hand-in-Hand* Office estab. for Insuring to the Proprietors thereof Houses & other Buildings from loss by Fire within the Cities of London & Westminster & thirty computed Miles from the same according to a certain Instrument or Deed of Settlement bearing date the 12th day of November 1696 and the several Subsequent orders & agreements of the General Meetings of the same So. inrolled in the high Court of Chancery & having paid into the Treasury of the said So. the Sum of . . . . as a prem. & the further Sum of . . . . as a deposit for Insuring from loss or damage by Fire to the said . . . . Executors Administrators or Assigns a . . . . Building valued at . . . . for the term of Seven Years from the date hereof the particular admeasurements & valuation of which premises are further set forth in the Margin hereof, Now We the Trustees of the said Contributionship whose names are hereunto subs. do order direct & appoint the Directors for the time being of the said Contributionship to raise & pay by & out of the Monies Securities and Effects of the said Contributionship pursuant & according to the said Deed of Sett. & subsequent orders & agreements unto the said . . . . Executors Administrators or Assigns the said Sum of . . . . Pounds or such part of the said Sum as any part or parts of the Building is or are seperately valued at in the Margin of this Pol. so often as the said Building part or parts thereof, or other Building or Buildings to be erected in the room thereof, shall be burnt down,

> blown up or demolished by or by reason or means of fire during the time this Pol. remains in force at the expiration of sixty days from the time when the Person insured or the Agent of such person makes a claim at the Board, unless the Directors for the time being of the said Contributionship their Officers Workmen or Assigns, shall at the charge of the said Contributionship on reasonable notice given of the loss by fire, of the said Building, or Buildings, begin to rebuild within the said sixty days, & procure the said Building or Buildings so burnt down, blown up or demolished, within a reasonable time to be rebuilt & put into as good Condition as the same was, or were in before the fire happened, & in case the said Building or Buildings be not demolished but only damaged by fire, to repair or cause to be repaired the damage so happening, and the same to be put into as good Condition as before the fire happened, or to pay to the insured the Money the said damage shall be valued at by their Workman, as they shall judge proper. In computing of which loss or damage no more than 3*s.* per Yard to be allowed for any Painting whatsoever, nor more than £30 for any marble or other chimney piece. And we likewise order the said Directors at the Expiration or sooner determination of this Pol. to repay unto the said . . . . Executors, Administrators or Assigns, such part of the said Money deposited as shall not in the mean time be applied towards the losses & charges of the So. pursuant to the Deed of Sett., & Subsequent orders and agreements aforesaid. Provided, & it is hereby declared & agreed that when any Assignment of this Pol. is made, such Assignment shall be entered in the Office Books, within 42 days from the date thereof, or else the Assignee shall have no benefit thereby. Also that in case a claim is not made at the Office for any loss or damage by fire, within 3 calendar Months after such fire shall happen it shall not be allowed by the Directors without the order of a General Meeting. In Witness whereof we have hereunto set our hands & seal the . . . . day of . . . . in the Year of our Lord, &c. Sealed and delivered (being first duly Stampt) in the presence of us.

On this form there were no conditions of ins., all these are embodied in the pol.; but on the left-hand side of the form is the following, added at a later date:

> N.B.—Notice is to be sent to the Office of any loss or damage before such loss or damage be repaired. If this Pol. be Assigned such Assignment is to be entered in the Office Books within 42 days from the date thereof or else the Assignee to have no benefit thereby. Note also that no Officer or Servant of this Office is to demand from the Persons insuring any Money for his own private use.

This last part of the notice we suspect had reference to the practice which had been introduced of making a charge for fixing up the plate. See Fire Ins. Office Marks.

The form bears clear resemblance to that of the Corp. of Lond.; and the term of the ins. is 7 years.

1710.—The following is the form of fire pol. first issued by the *Sun* Fire [then *Co. of London Insurers*], founded this year:

> This Present Instrument of Policy Witnesseth, That whereas . . . . hath hereby agreed to pay or cause to be paid to the agent of the Co. of *London Insurers* at his house in . . . . the sum of 3*s.* within ten days after every quarter day for the Ins. of . . . . from loss or damage by Fire Now know ye that so long as the said . . . . shall duely pay or cause to be paid the sum of 3*s.* a quarter at the times and place aforesaid the Co. of *London Insurers* in consideration thereof, bind themselves their heirs executors administrators and assigns by these presents to pay and satisfy to the said . . . . heirs executors administrators and assigns within 10 days after every quarter day in which he shall suffer by fire his whole loss, *if there be a sufficient sum of money in Bank to satisfy all the claims that shall happen that quarter*, or a proportionate share according to the exact tenor of their printed proposals dated the 30 Aug. 1710; *and further to cause to be deliver'd gratis to the friend or correspondent of the said . . . . in London, three times a week, the printed news-paper called the British Mercury.* In witness we the members of the said Co. have hereunto set our hands and the common seal the . . . . day of . . . . in the year of our Lord 171- . . . . Seal'd and deliver'd (being stampt according to Act of Parl.) in the presence of . . . .

There were no "Conditions" attached to this pol. in the form in which we now understand conditions; but the "proposals of the Co." formed a wrapper for the pol.; and it was held at a later date [Fire Ins., Conditions of] that these constituted part of the pol. The proposals referred to in this pol. we have given in extenso under this date in Fire Ins., Hist. of. It is further to be observed *that the sum insured under the pol. is not stated in the document itself.* In the "proposals" the amount is limited to £500.

Mr. Richard Atkins, in his useful little book—*The Average Clause*—says regarding the ins. cos. of this date:

> The practice of assu. against loss by fire on moveable property took its rise in England at the commencement of the 18th century. The early contracts were issued by comparatively small bodies of speculators, who undertook to cover the risk of loss by fire as far as the total sum of a fixed and uniform pol. say of £500. The prem. was paid by those who enrolled themselves in the shape of a stipulated quarterly subs. *There does not appear to have existed at the commencement any classification of risk analogous to that which is now in current use, in the shape of a scale of prems. graduated according to the risk.* The subs. were prob. confined to the proprietors of ordinary dwellings and shops, while all buildings and trades of a more hazardous description were altogether excluded from the subs.
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> The great peculiarity of these primitive pol. in undertaking to pay all loss that might happen within the fixed sum of the pol., irrespective of the amount of property actually at stake, or of any salvage that might be made, has, amidst many changes, descended to the present times, and stamped a peculiar character on our modern practice. [Specified Fire Pol.]

1724.—The following is a copy of the pol. of the *Westminster* Fire issued this year:

> No. 376.—This Instrument or Pol. witnesseth that . . . . having agreed to become, and by these presents doth become a member of the *Westminster* Ins. Office for Insuring Houses, Chambers, and all other Buildings from Loss by Fire, within the Bills of Mort., and other Places adjacent, pursuant to a D. of Sett. made in that Behalf bearing Date the First Day of June 1717, and Inrolled in the High Court of Chancery, and of several subsequent Orders or Agreements made at the General Meeting of the said So. or Contributionship, and also Inrolled in the said Court; And for and in consideration of the Sum of . . . . in hand pay'd by the said . . . . to the Trustees or Treasurers of the said Contributionship, being the consideration for insuring the sum of . . . . pounds unto the said . . . . h— exors. admors. and assigns, Upon a building, being . . . . for and during the term of 7 years from the Date hereof: Which said sum of . . . . is hereby declared to be deposited by the said . . . . as a Pledge or Caution for the Performance of the Agreements comprised in the said D. of Sett.

on h— part henceforth to be performed. Now we the Directors of the said Contributionship, for and in consideration thereof, do hereby Order, Direct, and Appoint the Trustees or Treasurers for the time being of the said Contributionship, to Raise, Pay, and Satisfy, by and out of the Monies, Securities, and Effects of the said Contributionship, unto the said . . . . h— exors. admors. or assigns, the said sum of . . . . Pounds at the end of 60 days next after, and so often as the said Building, or any other Buildings built in the room thereof, shall be burnt down, Blown up, Demolished or Damnified by or by reason or means of Fire, during the time this pol. remains in force; (Notice being forthwith given of such Damage by Fire, and the Pol. produced for every such Payment when made to be endorsed thereon;) Unless the Directors for the time being of the said Contributionship, their Officers, Agents, Workmen, or Assigns shall at the charge of the said Contributionship begin to Rebuild or Repair within the said 60 days, and procure the said Building or Buildings within a reasonable Time to be Rebuilt or Repaired, and put into as good Condition as the same was or were before such Fire or Fires so happening (except Gilding, History-Painting, and Carving) And we likewise Order and Direct the said Trustees or Treasurers for the time being of the said Contributionship, at the end of the said term of 7 years, to repay unto the said . . . . h—exors. admors. or assigns, the said Money so deposited as aforesaid, or so much thereof as shall not in the meantime be applied towards Losses, and the unavoidable Expense of the said Ins. Office, pursuant to the said D. of Sett.

Provided, and it is hereby Declared and Agreed, That if the said Deposit money shall not be demanded at this Ins. Office within the space of one year next after the Expiration of the said term of 7 years, Then the payment thereof shall cease, and the same shall be forfeited to the said Contributionship.

In Witness whereof, We have hereunto set our Hands and Seals this . . . . Day of . . . . in the . . . . year of the Reign of King George, *Anno. Dom.* 172-.

Sealed and Delivered (being first duly stampt, according to Act of Parl.) in the presence of . . . .

Then in the margin: "N.B.—If this pol. be assigned, such assignment is to be entered in the office within one and twenty days, or else the Assignee to have no benefit thereby." "Note also, that no officer or servant of this Office is to demand from the person insuring any money for his own private use." The imprint: "London, Printed for C. King in Westminster Hall, 1723."

1744.—The form of fire pol. provided by the Ins. Ordin. of *Amsterdam* under this date has already been given under AMSTERDAM, INS. ORDIN. OF. It presents several special features of interest.

The form of pol. in use by the *Hartford* Fire Ins. Co. [supposed to have been only an asso. of individuals for private protection without any corp. powers] at this date was the following. It is a clear adaptation from the *Amsterdam* pol.; but it is remarkable as being the oldest fire pol. in use in the U.S. of which we have any knowledge. Its close resemblance to the form of marine pol. of that date is also very apparent:

Whereas . . . . of . . . . *or whom else it may concern* wholly or partly, *friend or foe*, doth make assurance on his house against fire and all damages of fire; moreover against all damage which on account of fire may happen, either by *tempests, fire, wind, own fire*, negligence and fault of own servant, or of neighbours, whether those nearest or farthest off, all external accidents and misfortunes, *thought of and not thought of*, in what manner soever the damage by fire may happen, for the space of one year, commencing on the . . . . day of . . . . 17— and ending on the . . . . day of . . . . 17— at 12 o'cl. at noon, *valuing specially and voluntarily the said house at the sum insured.* And the assured, or whom it may concern, in case of damage or burnt, *shall need to give no proof nor account of the value, but the producing this pol. shall suffice.* And in case it should happen that the said house, the whole or part, are burnt and suffer damage on that account, we do hereby promise punctually to pay and ratify, within the space of 3 months after the fire shall have happened, due notice having been given to us, *and no deduction to be made* from the sum insured except 2½ p.c., *under which no loss or damage will be paid.* And in case of a partial loss, all that shall be found saved and preserved shall be deducted after the deduction of the charges paid for the saving and preserving and concerning which *the assured shall be believed on his oath without our alleging anything against it.* And so we, the assurers, *are contented*, and bind ourselves and goods, present and to come, *renouncing all cavils and exceptions contrary to these presents*, for the true performance of the premises; the consideration due us for this assurance by the assured at and after the rate of one-half per cent.

1782.—The following pol. is unique in many respects. It is the first pol. which was issued by *Phœnix* Fire (No. 2) founded this year; and it was issued in writing—the pol. forms not being ready. We give it complete except the names of the insured:

New Fire Office Co.—London 1782—No. 1. This Instrument or Pol. of Assu. witnesseth that Whereas . . . . have paid the sum of £ . . . . to the New Fire Office Co. for Ins. from Loss and Damage by Fire on their Stock and Utensils in Trade contained in their Sugar House situate . . . . not exceeding Four Thousand Pounds.

Now Know Ye, that from the date of these presents the Stock and Funds of this So. shall be subject and liable to pay to the said . . . . their exors. admors. and assigns, all such their damage and Loss which they the said . . . . shall suffer by Fire, not exceeding the sum of Four Thousand Pounds. This said pol. to remain in force until the . . . . day of . . . . until 6 o'cl. in the evening and no longer.

In Witness whereof we (three of the Trustees or acting members for the said Co.) have hereunto set our Hands and Seals the 17 day of January, 1782.

Signed and Seal'd, being first duly stampt in the presence of . . . .

There were no conditions attached. It is just such a form as might be used if all persons to such contracts were uniformly honest. The pol. is preserved at the offices of the Co.

1787.—At this date the following form of pol. was in use by the Corp. of the *Royal Exchange* Assu. of Houses and Goods from Fire:

This present Instrument or Pol. of Assu. Witnesseth, That whereas . . . . agreed to pay into the Treasury of the Corp. of the Royal Exchange Assu., at their office on the Royal Exchange, Lond., for the assu. of . . . . from Loss or Damage by Fire. Now Know all men by these presents, That the Cap. Stock, Estate, and Securities of the said Corp. shall be subject to and liable to pay, make good and satisfy unto the said assured . . . . heirs exors. or admors. any loss or damage which shall or may happen by fire to the said goods . . . . aforesaid (except such goods as hemp, flax, tallow, pitch, tar, turpentine, glass, china, and earthenwares, writings, books of accounts, notes, bills, bonds, tallies, ready money, jewels, plate, pictures, gunpowder, hay, straw, and corn unthreshed) within the space of 12 calendar months from the day of the date of this instrument or pol. of assu. not exceeding the sum of . . . ; and shall so continue, remain, and be subject and liable as aforesaid from year to year, to be computed from the . . . . day of . . . . in every year, for so long a time as the said assured shall well and truly pay or cause to be paid, the sum of . . . . into the Treasury of the said Corp. on or before the . . . . day of . . . . which shall be in each succeeding year, and the said Corp. shall agree thereto by accepting and receiving the same: which said loss or damage shall be paid in money immediately after the same shall be settled and adjusted; or otherwise, if the said loss or damage shall not be adjusted, settled, and paid within 60 days after notice thereof shall be given to the said Corp. by the said assured, that then the said Corp. their officers, workmen, or assigns, shall at the charge of the said Corp., at the end and expiration of the said 60 days, provide and supply the said assured *with the like quantity of goods of the same sort or kind*, and of equal value and goodness with *those burnt or damnified by Fire*. PROVIDED ALWAYS, nevertheless, and it is hereby declared to be the true intent and meaning of this deed or pol., that the stock, estate, and securities of the said Corp. shall not be subject or liable to pay or make good to the assured any loss or damage by fire which shall happen by any invasion, foreign enemy, or any military or usurped power whatsoever: PROVIDED ALSO that this deed or pol. shall not take place or be binding to the said Corp. until the prem. for one year is paid; or in case the said assured shall have already made, or shall hereafter make any other assu. upon the goods aforesaid, unless the same shall be allowed of, and so specified on the back of this pol.; OR if the said . . . . at the time when any such fire shall happen shall be in the possession of, or let to any person who shall use or exercise therein the trade of a sugar-baker, apothecary, chymist, colourman, distiller, bread or biscuit-baker, ship, or tallow-chandler, stable-keeper, inn-holder, or maltster, or shall be made use of for the storing or keeping of hemp, flax, tallow, pitch, tar, or turpentine; but that in all or any of the said cases, these presents, and every clause, article, and thing herein contained, shall cease, determine and be utterly void and of none effect, or otherwise shall remain in full force and virtue. In witness, etc.

N.B.—This pol. to be of no force if assigned, unless each assignment be allowed by an entry thereof on the books of this Co.

This is a far more effective contract than those hitherto given. Its main features were the following: The power of *reinstatement* is very strong, and is made to apply to goods as well as property. It protects itself against loss from *civil commotion*. The list of *exceptional articles* indicates a beginning in the classification of risks. *Ordin. renewal* of contract provided for. *Other ins.* must be noted and indorsed on pol. *Hazardous occupancy* voids pol. *Assignment* without consent, the same.

1794.—The following is the form of fire pol. for goods and effects in use by the *Ins. Co. of North America*, founded in *Philadelphia* this year:

By the President and Directors of the *Ins. Co. of North America*. Whereas . . . . of . . . . hath paid to the President and Directors of the Ins. Co. of N. A. . . . . dols. for ins. of . . . . [here describe property or effects insured] situate at . . . . from loss or damage by fire whilst the said [goods] shall be and remain in the house aforesaid for . . . . year- from this . . . . day of . . . . 179-. Know All Men By These Presents, that in consideration thereof the cap. stock, estate and securities of the said Corp. shall be subject to pay unto the said . . . . his heirs, executors, administrators or assigns the entire sum of . . . . dols., and so continue, remain and be subject as aforesaid from time to time, to be computed from the . . . . day of . . . . [not one of the usual quarter-days] in Every year for so long time as the said . . . . shall well and truly pay or cause to be paid the sum of . . . . dols. to the President and Directors of the said Ins. Co. on or before the . . . . day of . . . . which shall be in each succeeding year, and the said Corp. shall agree thereto by accepting the same; which said Loss or Damage shall be paid or indemnified in manner aforesaid within 30 days after proof of loss; and if any dispute shall arise respecting the same between the Corp. and the assured, such difference shall be submitted to the judgment and determination of arbitrators indifferently chosen, whose award in writing shall be conclusive and binding to all parties.

Provided always, nevertheless, and it is hereby declared to be the true intent and meaning of this pol., that the said stock, estate and securities of the said Corp. shall not be subject or liable to pay, or make good to the assured any loss or damage by fire which may happen by Invasion, Foreign Enemy, Civil Commotion, or any military or usurped powers whatever; And provided also that this pol. shall not take effect or be binding to the said Corp. in case the said assured shall have already made, or shall hereafter make any other assurance upon the goods aforesaid, unless the same shall be allowed of and specified on the back of this pol.; Or if the house above mentioned containing the goods of the said . . . . shall at the time when any such fire shall happen be in whole or in part occupied by any person who shall use or exercise therein the trade of a carpenter, joiner, cooper, tavern-keeper, or inn-holder, stable-keeper, bread or biscuit-baker, sugar-baker, ship-chandler, boat-builder, malt-drier, brewer, tallow-chandler, apothecary, chemist, oil and colourman, china, glass or earthenware seller; or shall be made use of for the storing or keeping of hemp, flax, tallow, pitch, tar, turpentine, rosin, saltpetre, sulphur, gunpowder, spirits of turpentine, shingles, hay, straw, fodder of any kind, corn unthreshed, oil, wax, distilled spirits . . . . but that in all or any of the said cases this pol. and every clause, article and thing therein contained shall be void and of none effect: otherwise it shall remain in full force and virtue. In Witness, &c.

N.B.—This pol. to be of no force if assigned, unless such assignment be allowed by an entry thereof in the books of the Co.

This form is somewhat crude as compared with the pol. of more modern date. For instance, no hour is named for commencement or termination of the risk; no provision is made for *notice of loss;* the *arbitration* clause is too wide; no limit is put to the time within which action may be brought; no *application* and *survey* referred to.

The forms of pol in use by the *Mut. Assu. So. against Fire on Buildings in the State of Virginia* at this date, which embodied a species of *perpetual* ins., have already been given under FIRE INS., PERPETUAL.

1798.—The following form of fire pol. was in use by the *Sun* Fire as late as this date:

SUN FIRE OFFICE. No. . . . . Whereas . . . . hath paid the sum of . . . . to the So. of the SUN FIRE OFFICE in Lond. and has agreed to pay, or cause to be paid to them, at their said office, the sum of . . . . on the . . . . and the like sum of . . . . yearly on the . . . . during the continuance of this pol. for ins. from Loss or Damage by Fire on . . . . [here fill in particulars of property ins.]

NOW, KNOW YE, that from the date of these presents, and so long as the said . . . . shall duly pay or cause to be paid, the said sum of . . . . at the times and place aforesaid; and the Trustees or

> acting members of the said So. for the time being shall agree to accept the same; the Stock and Fund of the said So. shall be subject and liable to pay to the said . . . . h— exors. admors. and assigns, all such . . . . damage and loss which . . . . the said . . . . shall suffer by fire, not exceeding the sum of £ . . . . *according to the exact tenor of their printed proposals date Nov. the first*, 1794, and of two Acts of Parl. of the 22nd and 37th Geo. III. for charging a Duty on persons whose property shall be insured against Loss by Fire. In witness, etc.
>
> N.B.—The interest in this pol. may be trans. by indorsement made and entered at the office, if the Trustees or acting members approve thereof, but not otherwise.

There was also a receipt for the duty, but no conditions whatever printed on the pol.

1867.—In May this year the Legislature of *Connecticut* prescribed a fire ins. pol. for use in that State; but it was found to be so unpopular a measure that the law was repealed in the following year.

A similar attempt had been made in the State of *New York*, some years previously, but it was defeated by the cos. before it became law.

1868.—During this year the *National Board* form of pol. was introduced throughout the U.S. Previous to this (says Mr. Griswold), *Philadelphia, New York, Boston, Providence, Hartford, New Orleans*—"all centres of ins. at an early date in the present century—each had its own peculiar form, conditions, exceptions, and stipulations: differing materially, and sometimes essentially from the others." "It was with a view to harmonize these differences and produce a standard form of pol., that the National Board form was adopted, and although not used by all of the cos. of the country, it has nevertheless come to be regarded as the standard pol." The form now in use by the **National Board Offices** is the following—revised, we believe, up to 1872:

> Policy No. . . . . Name of Co. . . . . Address of Office . . . . Whereas . . . . has paid to the . . . . Fire Ins. Co. the sum of . . . . dol. for Ins. from loss or damage by Fire viz. . . . . [Here insert description of property insured, and amount.] Now be it known that in consideration of such payment, the Cap. Stock and Fund of the said . . . . Co. shall be subject and liable to pay to the assured . . . . executors, administrators or assigns, all such loss or damage, not exceeding in amount the sum of . . . . dol. as shall happen by fire to the property as above specified during . . . . to wit, from the . . . . day of . . . . 187- (at 12 o'clock at noon) until the . . . . day of . . . . 187- (at 12 o'clock at noon), the said loss or damage to be estimated according to the actual cash value of the property at the time the same shall happen; and to be paid within 60 days after due notice and proof thereof made by the assured, in conformity with the following conditions. [Here follow the conditions, as already set forth in our art. Fire Ins., Conditions of.] And it is hereby understood and agreed, by and between this Co. and the assured, that this pol. is made and accepted in reference to the foregoing terms and conditions, and to the classes of hazards and memoranda printed on the back of this pol. [these we have given under Fire Ins., Classification of Risks], which are hereby declared to be a part of this contract.
>
> Provided always, and it is hereby expressly agreed and declared, and the true intent and meaning hereof is, that the said cap. stock and funds of the said Co. shall alone be answerable to the demands thereupon, under this pol.; and that no member of the said Co. shall be subject or liable to any demands against the said Co. upon any account or pretence whatsoever, beyond his share of the cap. stock or funds of the Co., and which share is set opposite his signature in the Deed of Sett. estab. the said Co., or mentioned in some other deed referring thereto, and declaring him to be a member thereof, anything contained in this pol. to the contrary notwithstanding.
>
> In witness whereof we (being Directors of the said Co.) have hereunto set our hands at . . . . this . . . . day of . . . . in the year of our Lord 187-. Not valid unless countersigned by the authorized agent at . . . . [Directors' signatures.] Countersigned . . . . Agent.

This is a very simple and practical form of pol.; and the conditions being placed on its face instead of the back, we regard as a decided improvement over the practice in the U.K.

That this form has not been as fully adhered to as was desired we learn from the Address of Mr. H. A. Oakley, President of the National Board, delivered before that body in April, 1873, wherein he said:

> My attention has been frequently called in the last year to the many difficulties which have arisen from a lack of uniformity in the printed portion of the pol. in use by the cos. of the country, *presenting serious obstacles in the way to adjustment of losses*. This subject has engaged the attention of this Board in previous years; and in 1868 a form of pol. was reported, which was adopted, as being the best adapted to the general wants of the cos. This gradually won its way into favour, and entered into general use before the close of that year; but in 1869 it was found that some of the conditions or clauses of the orig. form had been modified or altered to meet individual views, or to incorp. pet theories of certain cos. *The recent fire at Boston developed these differences in a marked degree.*

What followed will be spoken of under date 1873.

The following may be taken as an example of the form of pol. in use by the numerous **Mutual Fire Offices** in the U.S.:

> This pol. witnesseth, That whereas . . . . has become a member of the . . . . Mut. Fire Ins. Co. [Asso.], and bound and obliged himself, his heirs, executors, and administrators, *to pay all such sum or sums of money as may be assessed by the Directors thereof, pursuant to the Act incorp. said Co.*; and also secured to said Co. the sum of . . . . dol., being the amount of the deposit, or prem. for insuring the sum of . . . . dol. unto him, his heirs, executors, administrators and assigns on the following property, to wit [here follows description of property], reference being had to his application of even number herewith, filed in the office of the Co. for a more particular description, and as forming a part of this pol., during the term of . . . . years commencing at noon, on the . . . . day of . . . . 18—, and ending at noon on the same day of the month, 18—.
>
> Now Be It Known that we the members of the Co. for and in consideration of the premises, do hereby certify that the said . . . . is insured in and by the said Co. upon the property aforesaid in the sum of . . . . dol. And we therefore promise, according to the provisions of said Act, to pay and satisfy him, his heirs, exors., admors. or assigns, the said sum insured, within . . . . months next after the said property shall be burnt, destroyed or demolished by, or by reason or means of *fire*, and notice thereof given as required by the Act aforesaid, during the time this pol. shall remain in force; unless the directors shall within the said . . . . months, determine to rebuild or replace the property

destroyed. *And we do further promise*, That when and so often as the property aforesaid or any part thereof, or any other of equal value, built or supplied in the room thereof, shall happen to be injured by means of fire, such damages shall be made good, according to the estimate thereof, or repaired and put in as good condition as the same was before such fire happened.

Provided, *That if it should happen that the whole stock and contribution of the said Co. should ever be insufficient to pay and satisfy all the losses sustained by the members of the said Co., in such case a just average shall be made, and the payment to be demanded in virtue of this pol.* shall be dividend of the said stock and contribution in proportion to the sum insured, agreeably to the tenor and true intent of the Act aforesaid.

In witness whereof, the President of the said Co. has signed this pol. and the Sec. thereof has countersigned the same at . . . . the day of . . . . in the year of our Lord, 187- . . . . . President . . . . Sec.

The following note is appended to the pol. before us:

In estimating damages for furniture injured or destroyed, no allowance is made for musical instruments of any kind, nor for family paintings, nor for articles of plate or plated ware; nor is any allowance to be made for books, maps, or pictures of any kind, unless specially mentioned in the pol.

Ins. is in no case made on more than *two-thirds* of the value of any building, nor more than *one-half* of the value of furniture, or *one-half* of the least amount of stock-in-trade: and in case of a total loss, the Co. is not liable to pay more than *two-thirds* of the actual value of the building at the time of its loss, nor more than *one-half* of the value of personal property. Partial losses are paid in full, not exceeding the amount insured.

Gunpowder is not insurable—and in case a greater quantity is kept, or in a manner different from that required by law, the pol. covering the store in which such powder is kept, or the stock therein, is void.

1870.—During this year the British Offices—more particularly those belonging to the **Tariff Asso.**—adopted, mainly at the instance of Mr. Swinton Boult, a *uniform fire pol.*, with revised conditions, adapted to the modern requirements of the bus. These conditions have already been given under FIRE INS., CONDITIONS OF. The pol. is as follows:

Ann. pol. No. . . . . sum insured £ . . . . THIS POL. OF INS. WITNESSETH, That . . . . of . . . . hereinafter called the insured, having paid to the . . . . Ins. Co. (hereinafter called the Co.) the sum of £ . . . . for insuring against loss or damage by fire, as hereinafter mentioned, the property hereinafter described, in the several sums following, namely. [Then follows description of property insured, specifying sum on each item or class.]

The Co. agrees with the insured (but subject to the conditions endorsed hereon, which are to be taken as part of this pol.) that if the property above described, or any part thereof, shall be destroyed or damaged by fire, at any time between the . . . . day of . . . . 187-, and the . . . . day of . . . . 187-, both inclusive, or at any time afterwards, so long as the insured or . . . . representatives in interest, shall pay to the Co., and they shall accept the sum required for the renewal of this pol., on or before the . . . . [naming some quarter-day] in each succeeding year, the Co. will out of their cap. stock and funds pay or make good all such loss or damage to an amount not exceeding in respect of the several matters above specified the sum set opposite thereto respectively, and not exceeding in the whole the sum of £ . . . .

In witness whereof this pol. has been signed by . . . . Directors of the Co. this . . . . day of . . . . 187-.

In the U.K. all pol., other than mercantile, are made payable on one of the four quarter-days. When the ins. is effected, "odd time" to the nearest quarter-day is added to or deducted from the prem.

1872.—The modern form of pol., with conditions attached, used in the U.S. for PERPETUAL INS., is given under that title, at this date.

1873.—It may be useful to put on record the form of pol. and conditions under which the buildings of the International Exhibition held at *Vienna* this year were insured.

Fire Insurance Contract for the Buildings of the Vienna International Exhibition, 1873.

The below named Austrian-Hungarian ins. cos., each in the proportion and to the extent of the amount written as stated in paragraph I. of this contract, and on the basis of the application made by his Excellency the Director General of the Vienna International Exhibition, 1873, and dated October 28, 1872, on the building, hereinafter named; hereby insure under the condition of the contract, and on receipt of the below stated premiums the amount of

One million florins [about £100,000] for the benefit of the fund of the Exhibition for the time from December 1st, 1872, at 12 o'clock, noon, to December 31st, 1873, at 12 o'clock, noon.

I.—Insured are the following buildings:

[Here follows the enumeration of 22 buildings, all belonging to the Exhibition] and the following insurance companies each do insure of the amount of one million florins; the amount as follows; [here follow the names of 14 Austrian insurance companies, viz.

8	at	florins	95,000	each	760,000
1	,,	,,	65,000	,,	65,000
3	,,	,,	40,000	,,	120,000
1	,,	,,	30,000	,,	30,000
1	,,	,,	25,000	,,	25,000
14	Total				1,000,000]

II.—This ins. is made against damage by fire or lightning, whether fire ensues or not, and against damage resulting from all measures taken to extinguish the fire, or from tearing down the buildings or removing their contents.

Excepted from this ins. is damage occasioned by war, riot, or any military or usurped power, or caused by earthquakes; in case of an explosion only the damage by fire resulting therefrom is insured.

III.—The obligations of the ins. cos. are determined by this contract only, and by such written alterations or additions as may be agreed to. Before this contract takes effect, the Director General has to furnish two diagrams certified correct, and signed by him, on which the buildings hereby insured are marked for identification, one of these plans to be attached to this contract, the remaining one to be delivered to the ins. cos. Decorations on the insured buildings which have been paid for out of the funds of the Exhibition are included in this ins. The prem. on this ins. at the rate of 4 p.c. for the term of exhibition is due on the execution of this contract, and the ins. takes effect only after due payment has been made. This pol., or any part thereof, cannot be cancelled, and no return prem. is to be paid; the mutual ins. cos. (4) participating in this contract agree not to demand any add. prem. nor to return any dividend.

> IV.—In case of fire in any of the insured buildings, or anywhere on the Exhibition grounds, even if such fire should not cause any damage, the Director General agrees: *A*. To at once notify by telegraph the committee of the insurance companies designated in section 9 of this contract, and further to give notice in writing within 24 hours. *B*. To do everything in his power to limit the damages as much as possible, and he is empowered to take all necessary measures in the interest of the Exhibition, and for the preservation and protection of the building insured. *C*. To demand, in accordance with police regulations, within three days after the fire, an investigation by the proper authorities.
>
> V.—Any damage to the insured buildings is to be computed at the actual cost of erecting or repairing the same, and the committee on losses provided for by section 9 of this contract, as well as the appraisers appointed by both parties, shall be entitled to examine the original bills and contracts referring to the construction of said buildings.
>
> The damage is to be appraised on the above basis by two appraisers and a referee if required, their appraisal to be final for both parties without any appeal to the court or otherwise.
>
> Each party to appoint one appraiser; if not appointed, and written notice thereof given within eight days after a written request by the other party, the right to appoint the second appraiser to go to the other party. If the appraisers cannot agree, the amount of damage to be determined by a referee elected by them previous to their appraisal; this referee, however, to be bound by the figures given by both appraisers, and not allowed to go beyond or below the highest or lowest appraisal; the referee must be a government officer and an architect. If the appraisers cannot agree on a referee, the same to be appointed by the Judge of the Commercial Court of Vienna.
>
> The insured agrees not to make any alteration on damaged buildings which would interfere with the appraisal of damages, unless the appraisal should be delayed over one month from the date of the fire.
>
> VI.—Any loss under this contract to be paid without regard to the total value of the building insured, and whether the loss is caused by one or more fires at the same time in one or in several of the buildings. Any loss to be paid within thirty days to the Director General at Vienna, the amount insured to be reduced by the amount paid.
>
> VII.—All difference concerning this contract to be decided by arbitration, against which no appeal of any kind can be had.
>
> The arbitrator to be appointed in the same way as the appraiser in section 5.
>
> VIII.—All claims for the recovery of damages by the insured against third parties are assigned to the underwriters to the extent of the amount paid by them without any further assignment of such claim.
>
> IX.—The ins. cos. appoint a committee of ten which, through their chairman only, communicate with the insured, and all actions or declarations of this committee to be binding on the cos. The ins. cos. expressly waive their right to recall this authority, and in case any of the members of this committee resign or withdraw, the remaining members are to continue as the authorized representatives of all the interested cos., until new members are elected by general consent of all cos. and notice of such elections is given to the insured.
>
> The members of this committee are entitled to at any time inspect and survey all premises covered by this ins. and are to be furnished with the necessary permits and passes, and the Director General is required to furnish to this committee all necessary or desirable information.
>
> The committee will appoint a special committee of five to attend to the settlement of losses, the nature of which, for each loss, will be given to the insured.
>
> X.—The orig. of this pol. to be handed to the Director General of the Exhibition; each of the cos. to receive a certified copy.
>
> (Dated) VIENNA, *January*, 17, 1873. [Signed by the representatives of all companies.]

We are indebted to the *Spectator* of N.Y. for this pol. For incidents connected with the Ins. of Exhibition Buildings, see INTERNATIONAL EXHIBITIONS AND FIRE INS.

The *Boston* fire of the preceding year having brought into great prominence the inconveniences resulting from the want of uniformity in the conditions of the pol. under which the various properties destroyed were insured, the Board of Trade of that city took up the subject, and appointed a committee of its own body, under whose direction a pol. was drawn up, and designated "The Massachusetts Standard Pol." The Senate of the State enacted a measure adopting it for compulsory use. The other House took a more practical view of the question, and we believe the law never came into force. The pol. "was chiefly remarkable for its entire neglect of the rights of cos., and for making them liable for certain other destructive agents than fire—which they were forbidden to assume by their charters."

Mr. Oakley, the President of the National Board, U.S., in his Address this year, referring to the legislative and other efforts which had been made to obtain a uniform fire pol., said:

> The plea in all these cases was the diversity of forms in use, and the injustice worked to insurers by this means; and we cannot deny that there is plausibility in the plea. *It is my opinion that we owe a duty to the public in this particular, and that they have a right to demand from us uniformity in our contracts with them.* No better medium exists for carrying them into effect than this Board. Cannot we then agree to sacrifice individual theories to the general good of the bus., and adopt such a form of pol., to be known as the "National Board of Fire Underwriters Pol.," as will give confidence to insurers and full protection to the Co.? Such a form of pol. would undoubtedly be accepted by the public without question, and would give satisfaction to all.

1875.—It does not appear that the National Board pol. already given (under date 1868), although much in advance of the forms which preceded it, is even yet regarded as by any means final. At a meeting of the Association of Fire Underwriters of the North-west, held at Chicago this year, the Committee on "Conditions and Covenants of Pol." opened their report with the following paragraph:

> That the form of fire ins. pol. now in general use is defective in many particulars, no practical underwriter will deny. It has been built up by patchwork to accommodate itself to the shifting conditions and practices of the bus. and the multiplying decisions of the Courts, and is composed of as many pieces as was Joseph's coat—several of its provisions being without harmony or coherence. It contains many things of no material value, without which it would be more direct and satisfactory, and quite as secure for each party, and omits many things which should be included.

They justify these assertions by practical examples, which without doubt have received attention from the proper quarter.

The form of "Fire Guaranty," or more correctly "Fire Re-insurance" pol., as in use in the U.K., is as follows :

GUARANTEE POL., No. . . . Memorandum, That the . . . Ins. Co. hereby guarantees out of the funds of the said Co. to the directors of the . . . Ins. Co., the sum of £ . . . sterling in part of that Co.'s risk to the extent of . . . upon property assured by them, under their pol. No. . . . and dated the . . . day of . . . 18— issued to and in the name of . . . , the therein designated Assured.

The said Guarantee is from the . . . day of . . . 18— to the . . . day of . . . 18— both inclusive; and so long thereafter as shall be expressed in the usual renewal receipt of the Co.: and is subject to the provisions of the D. of Sett. and Conditions of Fire Ins. of the . . . Ins. Co. [the guaranteeing co.]

Dated the . . . day of . . . 18— Consideration—present payment £ . . .; future ann payment £ . .

It is essential to observe that the re-insurance is here specifically made subject to the conditions of the guaranteeing co.; and not to those of the orig. co., as it would be but for this stipulation.

The special form of fire pol. for ins. *Rent* during destruction of premises by fire, as used in the U.S., will be given under RENT INS.

French Policy.—The form of fire pol. in use in *France* differs from those of Gt. Britain or of the U.S. Its conditions and stipulations precede the written description of the property insured. They are very explicit regarding the rights of the co. The insured is required to sign the pol. before the contract is complete. The pol. are usually for 10 years ; but the premium is payable annually. The conditions are framed with an especial view to the collection of the prems. by the co.: the pol. in fact is a lien on the property for the prems. Here is a translation of the pol.:

THE UNION FIRE INS. CO., chartered 5 Oct. 1828.—City of Paris.—Ins. pol. No. . . . . Amount insured, Fr. . . . . Prem., Fr. . . . . Term . . . . years from 18— to 18—. General conditions:

Art. 1.—The co. insures the personal and real property described in the present pol. against damage by fire, even if the fire should be caused by lightning. The co. insures, moreover, in case of fire, the following risks, when the same are stipulated in the pol., viz.

Tenant's Risk, that is to say, the effects of the responsibility for which the party insured is liable as a tenant, according to Articles 1733 and 1734 of the Code Napoleon.

Claims of Neighbours, to wit, the consequences of any action that neighbours may take against the insured on the plea of communicating fire to their property, as provided for by Articles 1382, 1383 and 1384 of the same Code.

Claims of Tenants against the Owner, for damage caused to their furniture and goods, in accordance with the cases provided for by Articles 1386 and 1721 of the same Code.

Art. 2.—The co. will not be responsible in cases of fire occasioned by war, invasion, riot, military force of any kind, *volcanos* and *earthquakes*.

Art. 3.—The co. will not insure storehouses, or magazines or manufactories of gunpowder, deeds of all kinds, precious stones and jewels, gold and silver bullion and coin.

In cases of *explosion* or detonation, even when caused by lightning, the co. will not be responsible for the damage resulting therefrom, but will only guarantee to make good the damage from fire caused thereby.

The co. will not be responsible for articles lost or stolen, nor for laces, cashmeres, jewelry, medals, plate, pictures, statues, and generally all rare or precious articles, whether movable or fixed, unless the same shall be insured for special and specific sums.

The co. will be responsible for material damage only, and shall not be held to grant any indemnity for change of street line, lack of tenants or profit, cancelment of leases, inoccupation, cessation of labour, or for any other loss not material. All the above exceptions shall apply equally to the ins. of the risks mentioned in the 3rd, 4th and 5th para. of Art. 1.

Art. 4.—The ins. shall in no case result to the profit of the party insured, but shall guarantee to him only indemnity for such actual loss as he may suffer. Consequently the party insured shall not be entitled to cite or give as evidence the amounts insured, the prems. paid, or the designations and valuations contained in the pol. as an acknowledgment or proof of the existence and value of the articles insured, either at the time of contracting the ins. or in case of fire.

Art. 5.—Prems. are payable in advance at the head office of the co. in Paris. No receipt for prems. shall be valid unless mentioned in the pol. or taken from the register of renewal receipts with counterparts.

The first year's prem. must be paid down upon the pol. being signed, from which time the ins. shall take immediate effect, or the prem. for the first year shall be paid upon the day that the ins. commences. In all cases the pol. shall not be binding until after the payment of the first year's prem.

The simple payment of the prem. before the pol. is signed shall not bind either the applicant or the co., and they shall only be bound after the pol. is signed *by both parties*.

Art. 6.—The prems. for the years subsequent to the first year shall be paid at the latest within 15 days after the same become due. In default of the payment of any one prem. within 15 days after due, the force of the ins. shall be suspended, without it being necessary to make any demand or legal summons for payment, and the party insured in case of loss shall not be entitled to any indemnity.

The ins. shall remain suspended even during the proceedings taken by the co. to collect the over-due prem.; but the pol. shall in all cases become again valid, dating from noon of the day following that on which the payment of the over-due prem., and the costs, if any, shall be made to and accepted by the co. It is understood that the payment of an over-due prem. during or after a fire shall not give the party insured any right to indemnity.

The collection of former prems. made by the co. at the residences of parties insured shall not be considered as affecting the preceding stipulations. *If the prem. is not paid within the period of one year dating from the time when due, the pol. shall be considered cancelled at law for the time still to run, without the necessity of giving any notice to that effect. The unpaid prem. shall remain due to the co. as indemnity.* In case of legal proceedings, the pol. shall not be considered as legally cancelled until one year after the last act in such process at law.

Art. 7.—The party insured must declare and cause to be stated in the pol., *under penal of forfeiting all right to indemnity in case of fire*, whether the property insured belongs wholly or only partially to him, whether he owns the ground upon which the building insured is situated, whether he is a party deriving profit from the property, or a creditor, tenant, or agent, and generally in what capacity he acts.

Art. 8.—In the event of the sale or deed of gift of the property insured, *the seller or donor shall require the new proprietor to execute the pol., otherwise he shall pay the co., in addition to the prems. due, an indemnity equal to one year's prem.*

In case of death, sale, or deed of gift, the heirs or new proprietors shall declare the qualifications within one month following the death, sale, or deed of gift, and cause such declaration to be mentioned in the pol.

In case of dissolution of co-partnership, suspension of payment, or failure, the party insured or his assigns are required to immediately declare such dissolution of co-partnership, suspension, or failure, and cause their declaration to be noted on the pol.

Art. 9.—The party insured shall be required to notify the co., and cause such notification to be mentioned on the pol., and to pay an add. prem. if required. in the following cases, to wit:—1. Before making changes or additions in buildings insured, or containing property insured, which shall multiply or increase the risk. 2. Before erecting in such buildings or in contiguous buildings any factory works or steam engine, or establishing any trade or industry that shall increase the risk from fire. 3. Before placing in such building provisions, goods, or any articles whatsoever which might add to the perils of fire. 4. Before transporting the property insured to a place other than that designated in the pol. 5. Before trans. the ins. or tenant's risks and claims of neighbours from one place to another.

If buildings roofed with wood or thatch, a theatre, factory or foundry, should be erected upon property contiguous to that assured, the party insured shall give notice within a month at the latest after the estab. and construction of such buildings, and cause his declaration to be noted on the pol., and pay an add. prem.

Art. 10.—If the party insured shall have covered the property specified in this ins. prior to the date of the present pol., or if he shall subsequently guarantee such property for whatever cause and amount whatsoever in any mutual asso. or by any underwriters of any name or denomination, he shall declare the same and cause it to be noted on the pol.

If the party insured shall have previously covered, or if he shall subsequently cover, articles other than those included in this ins., but forming part of one and the same risk, he shall likewise be required to declare the fact and cause the same to be mentioned in the pol.

Art. 11.—*Upon receiving the declaration required by Art.* 8, 9, *and* 10, *the co. reserves to itself the right to cancel the pol. by giving simple notice to that effect, and the prems. paid or due shall belong to the co.*

In default of receiving such declaration within the time specified, and of the mention of the same on the pol., the ins. shall be suspended, and the insured, his representatives or assigns, shall not have any right to indemnity in case of fire.

Art. 12.—All concealment or false declarations on the part of the insured tending to diminish the degree of risk or change its character shall render the ins. void; and it shall be void even when such concealment or false declaration do not affect the loss or damage caused to the property insured. (Art. 348, Commercial Code.)

Art. 13.—*Immediately upon a fire breaking out, the party insured shall employ all means in his power to arrest its progress and save the property insured.*

The co. will take into account all damage and cost occasioned by removal on proper proof.

The party insured is required to give immediate notice to the manager in Paris in case of fire.

Art. 14.—Immediately after a fire the party insured shall make a declaration of the same, and his own cost, before the Justice of the Peace of the district, and this declaration shall state the precise time of the occurrence of the fire, its duration, *the known or presumptive origin of the same, the means taken to arrest its progress, as well as all other incidental circumstances;* and shall also specify the nature and approximative amount of the damage sustained.

A formal copy of this declaration shall be forwarded to the co. without delay. The party insured shall further be required to draw up and transmit a statement of the articles burned, damaged and saved. *If the party insured shall not transmit the documents required by the present Art. within 15 days after the occurrence of the fire, he shall forfeit all rights and claims upon the co., unless in the case of proof that he was unable to do so.*

Art. 15.—*In case buildings insured by the co. shall be damaged or destroyed by order of the authorities, for the purpose of checking the progress of a fire, in such case the co. will make good the loss.*

Art. 16.—The insured shall be required to prove, by all the means and documents in his possession, the existence and value of the property insured, at the time of the occurrence of the fire, as well as the amount of the damage sustained.

The co. shall be entitled to require the party insured to make oath to his statements in due form according to law.

Any party insured who shall knowingly exaggerate the amount of his damage, or who shall assume articles to have been destroyed by the flames, when they did not exist at the time of the fire, or who shall misrepresent or remove a part or the whole of the articles saved, or who shall present untrue and fraudulent documents and means as evidence, or who, finally, shall have willingly caused the destruction by fire of the property insured, shall forfeit all rights to indemnification, *and the co. shall be at liberty to cancel all the pol. that it may have granted to said insured.*

Art. 17.—Damages for loss by fire shall be adjusted either by private agreement, or be appraised after investigation by two experts selected by the parties, either on the spot or elsewhere. If the experts cannot agree, they shall choose a third arbitrator, the three acting in common accord, the majority ruling. The parties may require that the third arbitrator shall be chosen at a point other than that where the party insured may reside. In case either of the parties shall fail to appoint his arbitrator, or in case the two experts shall neglect to name a third expert, the same shall be appointed, at the request of the most earnest of the two parties, by the President of the Civil or Commercial Court of the district.

In all cases the cost of appraisement shall be borne equally—one-half by the co. and the other half by the party insured.

Art. 18.—Real property, exclusive of the value of the soil, and personal property shall be appraised at their actual value at the time of the fire. Provisions and goods shall be estimated at the prices current on the day of the fire. Articles and goods in course of manufacture shall be appraised at the rate of the raw material, with the add. of the cost of manufacture, up to the date of the fire.

Art. 19.—If it should result upon valuation by private agreement or from the appraisers' formal valuation, that the value of the property insured is less than the amount insured, the party insured shall be entitled to receive compensation only for the actual and proven loss.

If, on the contrary, it should appear that the value of the property covered by the pol. exceeded at the time of the fire the sum insured, in such case the party insured shall be considered as his own underwriter for such excess, and in this capacity he shall bear his share of the loss in the proper proportion.

Should there be several insurers, and if the declarations required by the first para. of Art. 10 have been noted, the co., in case of fire, shall bear its due proportion of the loss adjusted, according to the conditions of the present pol.

In no case shall the co. be required to pay more than the sum insured by it, and its share of the cost of appraisement.

Art. 20.—*The insured shall not make any abandonment, either total or partial, of the property insured, whether damaged or undamaged.*

The co. shall be entitled to take either all or a portion of the damaged property and material appertaining to burned buildings at their appraised value.

The co. may, within a period specified by the arbitrators or fixed by private agreement, cause any building, damaged or destroyed by fire, to be repaired or reconstructed, according to the opinion of the appraisers. The co. may likewise repair or replace in kind, the whole or a portion of the articles damaged or destroyed by fire.

Art. 21.—The ins. of tenant's risks is based upon the total value of the building when it is occupied by only one tenant, and in this case the loss by fire is regulated in accordance with Articles 18 and 19. In case there should be several tenants, the tenant's risk is based upon the amount of rent.

If the tenant should have covered a sum equal to at least 15 *times the annual amount of his rent, the co. will be responsible in his stead for the total damage up to amount of the sum insured.*

If he has insured a less sum, the co. will only be responsible for damage in the proportion existing between the amount insured and 15 years' rent.

Art. 22.—*In case of fire, or in the case provided for by Art.* 15, *the co. reserves to itself its rights and those of the party insured, against all defendants generally, in whatsoever capacity they may come, and especially against tenants, neighbours, incendiaries, mut. ins. asso., underwriters insuring for prems. or otherwise; and to this end and effect, the party insured, as far as he is concerned, hereby delegates his rights to the co., without requiring any guarantee, by this pol. alone, dispensing with any other instrument of cession, transfer, deed or conveyance.* The party insured is bound, at the request of the co., to confirm and reiterate this delegation and assignment of his rights in a separate instrument, drawn up before a notary; and furthermore, to reiterate the delegation in his receipt for payment of damages.

Should fire be communicated from a building insured by the co. to another building also insured by it, the co. may refrain from taking proceedings against the party insured, whose building communicated the fire to the other; but this shall apply only to real and immovable property.

Art. 23.—The amount of the adjusted damage is payable in cash, at the head office of the co.

After a loss, whatever may be the amount of the damage, the co. may cancel the pol., either in full or partially, by a simple notice to that effect; the prem. or prems. paid belonging to the co.

Art. 24.—All suits for recovery of damages must be brought within 6 months after the date of the fire or the last paper sent in regarding the claim. Consequently, after the expiration of that term, the co. cannot be required to make any compensation.

The practice of fire ins. in *France* will be considered under FRANCE, sub-heading *Fire Ins.*

German Policy.—The *German* fire pol. resembles in its form that of France. The conditions or articles of ins. precede the written description of the property, which is insured subject to these.

THE GERMAN PHŒNIX INS. Co. of Frankfort-on-the-Main. General Conditions:

Art. 1.—The co. insures against damage by fire, and guarantees not only indemnification for actual and direct damage by fire, but agrees, moreover, to make good all loss that may occur to the property insured by lightning, water, damage in attempting to save and remove goods, as well as the value of missing articles, upon proper proof. Where buildings insured by the co. shall be torn down in cases of conflagration, by order of the competent authorities, the co. will make good the loss to the insured.

The co. will not make good any loss by fire resulting from the effects of war, military forces, rebellion, riot, illegal force, *earthquakes, volcanic eruptions, or gross neglect on the part of the person or persons insured.* In case of *explosion* the co. will not be responsible for the destruction caused thereby, but will make good any damage by fire so originated. By special agreement, and upon the payment of an additional prem., the co. will become responsible for damage caused by explosions disconnected from loss by fire.

In case of damage to, or the loss of articles by water, or in attempting to save the same, the co. will not grant compensation, unless the building containing them or that immediately contiguous shall be on fire. *Compensation for articles missing will only be allowed when the party insured shall, within three days after the fire, give notice thereof to the proper authorities, with an exact statement of the missing objects. In any event no compensation shall be paid for such articles until after the conclusion of the investigation ordered by the authorities.* The obligations of the co. towards the party insured are defined solely by the contents of the pol. and renewals.

Art. 2.—The co. does not insure powder mills, or depots or magazines for the storage of gunpowder, and, furthermore, documents of every description, especially securities, coin, and paper money, jewels, real gems, gold and silver in bars, are entirely excluded from ins. Lace, cashmeres, ornaments, medals, gold and silver tissues, paintings, statuary, *and especially all rare and costly articles, as well as such objects as have an imaginary and intrinsic value, whether personal or real,* shall not be held to be insured unless specially specified in the pol.

With regard to buildings, all parts not specially excepted in the conditions, and thus consequently the cellars and foundations, are included in the ins. Articles situated outside the limits specified in the pol. are not considered to be insured.

Art. 3.—*In order that the ins. may not prove an incentive to improper gain on the part of the insured, the said party shall not be entitled to make use of indirectly, or refer to the amount insured, or the prems. paid, or the descriptions and estimates contained in the pol., as an acknowledgment, or proof, or presumption of the value, or even of the existence of the articles insured;* moreover, the party insured is bound to show to the co. the existence and value of the articles insured at the time of the fire, by all means and certificates in his power, as well as the genuineness and amount of the damage sustained.

Art. 4.—The party insured is bound to answer correctly the questions printed on the form of application, and to state accurately, in any documents executed by him and attached to said application, all facts regarding the danger of fire and the nature of the articles proposed to be insured.

Art. 5.—*The party insured must declare and cause to be stated in the pol., whether he is the owner of a part or of the whole of the articles insured, or whether he is acting as user, creditor, manager, attorney, or in whatever other capacity.*

Art. 6.—If at the time of the issuing of the present pol. the property shall have been insured elsewhere, notice thereof shall be given and mentioned on the pol.

Art. 7.—The ins. shall not be valid except upon due payment of the prems. *The acceptance of the pol. and of the renewal receipts by the insured shall constitute his assent to the prem. and duration of the ins. as therein expressed.* The party insured is bound to pay his prem. without being summoned to the agent of the co. at the latter's domicile, and the co. is not bound to demand payment of the same. If the ann. prem. upon an ins. contracted for a term of years shall not be paid at the commencement of each insurance year, then the ins. shall be void, *but the co. shall have the right to collect the prem. by due process of law.* The ins. shall not be considered to be again in force until after the expiration of 24 hours after all unpaid back prems. shall have been paid and received. *No return of* *prems. once paid shall be made with the exception of the case mentioned in Art. No. 18.* Payment of a prem. or prems. previously lapsed made during or after a fire shall give no right to indemnification.

Art. 8.—*If during the term of the ins. the risk from fire should increase—if the property insured should change owners—if the property insured should be transferred to other premises than those specified in the pol.—or if the property should be insured by another co.—then in each and all of these cases the further continuance of the ins. shall be subject to the consent of the co. The party insured shall be required to apply for such consent in writing, and if the same be granted, a memorandum to that effect shall be made.*

Art. 9.—*In case of a fire occurring, it shall be the duty of the party insured to do his utmost to save the articles insured, and to give attention to the safety of the same to his best ability both during and after their removal. But such removal shall only be made in accordance with the provisions of Art. 1 above stated, and not against the orders of the agent or contrary to special conditions of ins. Immediately upon the breaking out of a fire, the agent for the district must be notified, or in his absence, the head agent.* When such immediate notification is not possible, notice must, in any event, be given within 24 hours after the occurrence of the fire. In case there should be no agent of the co. in the locality, notice of the fire must then be sent to the manager of the co.

Art. 10.—In case of loss or damage the party insured shall be bound as follows, viz.:

A.—To make a deposition and statement of his own accord within three days after the fire, before the proper authorities, as to the time of the outbreak of the fire, the duration thereof, and the known or suppositious causes of the same, the means employed to extinguish it, together with any and all circumstances relevant thereto, as well as the nature and probable amount of the damage sustained. A certified copy of the formal investigation must be forwarded to the agent within 14 days, or in case there should be no agent in the locality, then to the director of the co.

B.—In the case of movable property, the party insured shall, within 14 days after the fire, transmit to the agent a statement, duly signed, specifying the articles in hand at the time of the fire, those burnt, lost, saved in damaged condition, and those remaining without damage, together with a special statement of the value thereof. *This document must be drawn up with the most conscientious accuracy, it must not contain a missing article as burnt or lost, nor must the existence of any article saved be withheld. The periods of time above mentioned, in case of physical disability, shall commence from the date of cessation of such disability.*

Art. 11.—The co. shall have the right to require the party insured to prove the actual amount of goods on hand, and the value of the same at the time of the fire, as well as the amount of damage sustained by him, by the production of his books, invoices, accounts, and other vouchers, and to require him to make oath to the truth of his statements in due legal form.

Art. 12.—Any party insured who shall contravene any of the conditions of Articles 4 to 11, or who shall not entirely fulfil the obligations therein expressed, or who shall be guilty of making an unwarranted declaration or a concealment of fact, as referred to in clause B. of Article 10, or who shall make use of false or deceitful means in his own interest, or who, finally, shall himself set fire to property insured or cause the burning of the same by gross negligence, shall forfeit all claim to indemnification.

Art. 13.—Damage by fire shall be adjusted either by mutual agreement or by investigation and appraisement of two experts selected in the locality. Each side shall appoint one appraiser, and in case these appraisers cannot agree, then they shall choose an umpire. The three arbitrators shall act together and submit to the majority of votes among themselves. *Both parties shall be allowed to demand that the umpire be chosen in a locality other than that wherein the party insured resides.* Should one of the parties neglect to name an arbitrator, the nomination of the same shall devolve, at the request of the other party, upon the presiding officer of the proper court, in accordance with Art. 21. And in like manner shall it be done if the two arbitrators fail to agree upon the choice of an umpire at the request of the party making the motion. *The cost of appraisement made by the arbitrators shall be borne in the proportion of one-half by each party.* The investigation of damage, whether by direct adjustment between the party insured and the co., or by the intermediacy of arbitrators, shall only apply to fixing the amount of such damage, without prejudice to the rights of the co. as expressed in the pol. *During the time that such damage remains undetermined the party insured shall make no change in the disposition of the damaged goods or premises other than that which may be necessary for the due preservation of the same.*

Art. 14.—*Buildings shall be valued according to the combined worth of their materials and cost of erection, taking into consideration their age and condition, and any special cause of depreciation in value.* The ground lot and the advantages of location, improvements, speculative value or fancy value, shall not be considered in making a valuation; merchandize, raw materials, produce and live stock shall be appraised at the current prices in accordance with their quality and condition; *machinery and manufacturing apparatus at first cost, with deduction for depreciation in value on account of age, use, change of system or stagnation of such branch of industry;* dry goods, household furniture and all other articles, at first cost, with deduction for decrease in value, owing to age, use and change of fashion.

Art. 15.—If it shall appear, either in amicable settlement or by the appraisement of experts, that the value of the articles insured is less than the amount of the ins., the party insured can only claim indemnification in the sum of such lesser value. But if, on the contrary, it shall become manifest that at the time of the fire the value of the articles insured by the pol. exceeds the amount of the ins., then the party insured shall be considered as his own insurer for such surplus, and in such capacity he shall bear his proportionate share of the loss. If the property shall be insured in several ins. cos., and the notification required by Art. 6 or 8 sent and approved, then the co. will bear its share of the loss in proportion to the other amounts insured and in accordance with the conditions of the present pol. In no case shall the co. be liable for more than the amount insured and its share of the cost of appraisement.

Art. 16.—*The party insured shall not be entitled to require the co. to take either a portion or the whole of the goods insured, whether they be damaged or not. The co., on the other hand, shall have the option, either of leaving both the damaged and undamaged articles in the hands of the party insured as an equivalent for the ascertained value of the same, or of accepting the same upon allowing such value.* The co. shall furthermore have the right, both as regards buildings and portable property, to make good all damage by replacing the articles insured *in kind.*

Art. 17.—*All rights and claims for compensation for damages that the party insured may have or acquire in case of a fire against persons liable in general, and especially against his tenants, neighbours, the known or suspected originators of the fire, ins. cos. or others, upon any legal ground whatsoever, are assigned by virtue of this pol. to the co., without the necessity of any other obligation or warranty on the part of the party insured.* The co. will refrain from enforcing these rights against such parties as may be insured in the same, *with the exception of cases where the damage may be occasioned by their gross negligence and fault.* The party insured is bound, if the co. shall require it, to confirm the assignment of the above-mentioned rights, either by a special deed to that effect, or in his receipt for indemnification for damages.

Art. 18.—The amount of damage compensation, whether the same be fixed by agreement and mutually acceptable valuation or by judicial decision, shall be paid in cash within the space of one month thereafter, at the place where the pol. was issued, due receipt being given therefor. The co. shall not be held to pay interest upon the amount of damages until after the expiration of said month, provided that the damages be then still unpaid. If the payment of the amount of damages should be prevented by arrest, intervention, opposition or want of evidence on the part of the insured, his heirs and legal representatives, the co. shall not be bound to deposit or pay said sum before the removal of such obstacles, or be held responsible for such delay in the payment, nor for any amount of interest whatsoever. The sum insured decreases in case of loss in the same amount as the ascertained amount of the damage sustained. Should such damage exceed one-half of the amount insured, then the ins. shall cease from and after the date of the fire. *Moreover, whenever a fire takes place, or a claim for damages has been made, both the co. and the party insured shall have the right to cancel for the future the ins. in question, as well as other and all ins. contracts in force between them*, by giving a simple notice the one to the other to that effect in writing. Should such notice of cancelment emanate from the co., the prems. paid in advance and not due upon pols. of several years date, shall be repaid to the party insured.

Art. 19.—When an insured building is subject to a mortgage, the payment of amount of loss or damage can only be made for the purpose of reconstruction; so the mortgagee must either consent to an unconditional payment or be entitled to receive the same. Should a claim for damages made by a party insured on such a building become lost through his own fault, then the co. will apply the amount of the damages, unless the pol. should have lapsed through non-payment of prem. to the satisfaction of said mortgagee upon renouncing his claims upon the party insured.

Art. 20.—All claims for damage not made within six months after the date of the fire, whether adjusted by mutual agreement in writing or brought before the competent civil court in due and proper form by the party insured, shall become null and void at the expiration of such term by virtue of this ins. contract.

Art. 21.—The co. will appear before the ordinary (not the commercial) court of the place where its pol. or the renewal receipt belonging thereto may be issued, provided that the damage by fire shall occur within the limits of the same State wherein the place whence the pol. was issued is situated; otherwise before the ordinary court of the judicial district wherein the fire may occur.

The peculiarities of this pol. are several. The pol. covers "missing articles" under proper proof. It does not cover damage caused by *gross neglect* of the insured (Art. 1). The co. need not demand prems., but may recover them by process of law (Art. 7). Fires to be notified to district agent immediately on breaking out; and the insured must do his utmost to save property from destruction (Art. 9). No change to be made in the disposition of goods during adjustment of loss (Art. 13). Valuations of buildings burned must embrace consideration of *special causes of depreciation in value;* and in valuing machinery, *stagnation in the branch of industry* in which the machinery has been employed must be considered (Art. 14). In the case of mortgage pol., the premises are to be restored (Art. 19). Actions to be brought within 6 months from fire (Art. 20).

Hamburg Special Policy.—Under title HAMBURG we shall give the special form of pol. in use in that city "against fire in Transatlantic places," which embraces some peculiarities.

New Zealand Policy.—It will be useful, as well as interesting, to add the form of pol. in use in the Antipodes. Here is the pol. of the *New Zealand* Ins. Co. "for Fire, Marine and General Purposes," founded in Auckland in 1859. The pol. is one of recent date:

No. . . . . sum insured £ . . . . prem. £ . . . . WHEREAS . . . . ha— paid to the NEW ZEALAND INS. Co. the sum of . . . . being the prem. on the sum insured by this pol. from the . . . . day of . . . . 187- to the . . . . day of . . . . 187- at 4 o'cl. in the evening of that day, for the ins. against Loss or Damage by Fire of the property hereinafter described, to the amount hereinafter mentioned. [Here follows description of the property.]

N.B.—It is hereby declared that if the insured hold any pol. subject to average, on property covered by this ins., this pol. shall, in like manner, be subject to average.

Now, BE IT KNOWN that, from the . . . . day of . . . . 187- until the . . . . day of . . . . in the year of our Lord 187-, and for so long afterwards as the assured . . . . heirs, exors. or admors. shall from time to time pay, or cause to be paid, the sums required for the renewal of this pol., and the directors of the said co. shall agree thereto by accepting the same, the funds and property of the said co. shall be subject and liable to pay, reinstate, or make good to the said assured . . . . heirs, exors. or admors. such Loss or Damage as shall be occasioned by Fire to the property above mentioned and hereby insured, not exceeding in each case respectively the sum or sums hereinbefore severally specified and stated against each property.

PROVIDED ALWAYS, That this ins. shall at all times, and under all circumstances, be subject to the Conditions and Stipulations printed on the back hereof, which Conditions and Stipulations constitute the basis of this ins., and are to be considered as incorp. in and forming a part of this pol.

IN WITNESS WHEREOF, the Common Seal of the "New Zealand Ins. Co." has been hereunto affixed at Auckland, in the Colony of New Zealand, this . . . . day of . . . . in the year of our Lord 187- [Signed by 3 directors and the manager.]

The following are the conditions and stipulations referred to in this pol.:

I.—That upon the ins. of any property, whether buildings or goods deposited therein, the applicant shall state his name, residence, occupation, *and the nature of his interest*, and specify of what materials the walls and roofs of such buildings are respectively constructed, where situated, and by whom occupied, and whether as private dwellings, or how otherwise, whether any manufacture or hazardous trade be carried on, or any hazardous articles be deposited or kept therein, and if so, shall describe the nature and quantities thereof; whether any steam engine, furnace, kiln, stove, coakel, or other apparatus whereby heat is produced (common grates and stoves in substantial stone or brick fireplaces in private dwellings excepted) be erected on the premises, and if so, shall specify particularly the nature and construction thereof respectively, together with the construction and occupation of contiguous or immediately adjacent buildings; and if such specification do not truly and circumstantially describe the property, and the several particulars regarding the same, as aforesaid, so that the nature and degree of the risk may be justly estimated, the pol. of ins. thereon shall be null and void. The ins. on any buildings shall not be held to include anything outside thereof, such as clap boarding, fences, blinds, galleries, porches, *appentis*, sheds, or other buildings, except the same be specially mentioned and valued in the pol. No furniture usually denominated fixtures, machinery, or other *legal* or *constructed immovables* contained in any building, shall be held to be insured, as appertaining or belonging thereto, except such fixtures as shall be specially named in the body of the pol.

II.—That in case any alteration or addition shall have been made in or to any risk on which such ins. has been effected, whether such alteration or addition do consist in the erection on the premises of apparatus for producing heat, or in the introduction of articles more hazardous than may be allowed in the pol., or in the change of the nature of the occupation, or in any other manner whatsoever, by which the degree of risk is increased, and a consequent additional prem. would be required, and whether such ins. has been effected on the building itself, or on goods, wares or merchandize deposited therein, and the insured shall not have given due notice thereof respectively to the said co., or its manager or agent, in writing, and unless such alteration or addition shall have been allowed by indorsement on this pol., and such increased prem. shall have been paid as may be required, such pol. or ins. shall be null and void.

III.—That houses, buildings, and goods held in trust or on commission, must be insured as such, otherwise the pol. will not extend to cover them.

IV.—No ins. proposed to this co. shall be in force until the prem. be actually paid; and persons desirous of continuing ins. must make their respective payments of the prem. thereon, on or before the days on which they respectively become due, otherwise such ins. will expire; and the only evidence of such payments shall be the printed receipt issued from the office, and signed by the manager or one of the clerks or agents of the co.

V.—No loss or damage by fire, occasioned by invasion, foreign enemy, riot, civil commotion, military or usurped power whatever, *earthquake, or hurricane, or spontaneous combustion*, will be made good. Neither will this co. be answerable for loss or damage to stock or goods of any kind which shall or may happen to the same while undergoing any process in or by which the application of fire heat is necessary; and the pol. shall remain suspended, and be of no effect in respect to any loss or damage which shall happen or arise during the period of any of the foregoing contingencies. *Losses by lightning will be made good when either the buildings or the effects assured have been actually set on fire thereby, and burnt in consequence thereof.*

VI.—That all ins. on farming stock (which comprehends all sorts of corn and grain, hay and straw, in barns or stacks, farming utensils, and live stock) shall be effected under such general description. But this co. will not be answerable for any loss or damage happening thereto, occasioned by the natural heating of any of the articles or commodities so comprehended and included in such ins.; but the loss on any property in consequence (except that by which its natural heating has been the cause of the fire) will be made good.

VII.—That books of accounts, written securities, money, bank notes, plate-glass windows, and gunpowder, will not be insured or comprehended in any ins. effected by or with this co., nor will any loss or damage, in any case, or of any description, be made good, when more than *ten pounds of gunpowder* shall be deposited or kept on the premises, unless the same shall be specially allowed on the pol.

VIII.—China, glass, looking-glasses, jewels, watches, trinkets, medals, and other curiosities, prints (not in trade), paintings, drawings, and sculptures, are not included in this ins., unless they are specified in the pol., excepting when insured by special agreement under the term "*personal property of every description.*" In cases of loss, not more than £10 will be allowed on any one picture or print, unless a valued catalogue shall have been previously deposited in the office.

IX.—No claim shall be recognized or recoverable if the property insured be previously or subsequently insured elsewhere, unless the particulars of such other ins. be notified to the co. in writing, and allowed by endorsement hereon; *provided, on such notice being given, after the issue of the pol., it shall be optional with the co. to cancel the same, returning the ratable prem. for the unexpired term thereof;* and in no case, when any property insured by this pol. is insured elsewhere, shall this co. be liable to pay more than their ratable proportion of loss or damage.

X.—Upon the death of the assured, or the assignment of any interest assured in this co., the pol. and int. therein may be continued to the heir, executor, or administrator respectively, or be transferred to the person who shall, upon such death or by such assignment, be entitled to the property insured, provided that such heir, executor, or administrator, or other person so entitled, procure his or her int. therein to be endorsed on the pol. by the manager or authorized agent of the co.

XI.—That the insured sustaining any loss or damage by fire *shall forthwith give notice in writing to the directors or manager, or to the nearest agent of the co.*, and shall, within 15 days after such fire shall have happened, deliver to the said directors, their manager, or agent, as accurate and particular account in detail of their loss or damage respectively as the nature and circumstances of the case will admit, and shall verify the same by solemn declaration or affirmation, before a justice of the peace, and shall produce his books of account, vouchers, and such other evidence as the directors may reasonably require; and until such declaration or affirmation, account and evidence are produced, the amount of such loss, or any part thereof, shall not be payable or recoverable. No profit of any kind is to be included in such claim; and if there appear to be any fraud, over-charge, imposition or any misrepresentation, or if the fire shall have happened by the procurement or wilful act, means or connivance of the insured or claimants, they shall be excluded from all benefit under this pol.

XII.—That in every case of loss or damage for which the said co. shall be liable, the same, on being duly proved and the accounts adjusted, shall either be paid immediately, at the office of the co., or the said co. shall have the option, *where the ins. may be on goods, to supply the insured with the like quantity of goods, of the same sort or kind, and of equal value and goodness with those destroyed or damaged by fire;* or where the ins. may be on houses and buildings, the said co. shall have the option, with all convenient speed, to rebuild or repair and reinstate the same, and put them into as good and substantial a condition as they were in at the time when such fire happened. The assured shall not be permitted to abandon any movable property insured, which shall be injured in consequence of fire, without consent of the co. *This co. shall not be answerable for the rent of premises destroyed or damaged by fire, unless the same shall be specially agreed upon and inserted in the pol.*

XIII.—*That if in any case the co. shall be unable to reinstate or repair the buildings because of any provisions in the Acts in force for regulating the alignment of streets, or the erection of buildings, the co. shall, in every such case, only be liable to pay such sum as would be requisite to reinstate or repair such buildings if the same could lawfully be reinstated to their former condition.*

XIV.—*In case of the removal of property to escape conflagration, the co. will contribute ratably with the insured and other cos. interested, to the expenses of salvage and the damage the property may sustain by such removal;* but the co. will not hold itself liable for any loss or damage upon property removed from any building *contrary* to the declared desire of a director, officer, or agent of the said co., or not ordered or sanctioned by such director, officer, or agent.

XV.—If any difference shall arise between this co. and the insured with respect to any claim for loss or damage by fire, and no fraud be suspected, such difference shall be submitted to the determination of arbiters, mutually chosen, whose award in writing, or that of an umpire previously appointed by them, shall be conclusive and binding on both parties. *But in no case shall this co. be obliged to undertake the risk of the sale of damaged goods.* The arbiters or valuers shall fix the value as it stood immediately before and the value immediately after the fire, and the co. shall make good, or pay, the difference between these two sums, either by repairs and restitution, or by payment in cash, at their own option.

XVI.—*The co. will not be answerable for any loss where fires are used in buildings unprovided* *with good and substantial brick or stone chimneys, or in consequence of stoves or stove pipes placed and used contrary to law, or in consequence of the infringement of any law in force for the suppression or prevention of fires*, or where stove pipes are carried through the exterior walls or roofs of any house or building; or for any loss by fire in any building under construction or repair, or movables therein, wherein carpenters and joiners are employed, unless the special consent of the co. be first obtained and indorsed on the pol.

XVII.—It is furthermore hereby expressly provided, that no suit or action of any kind against the said co., for the recovery of any claim upon, under, or by virtue of this pol., shall be sustainable in any court of law or equity, unless such suit or action shall be commenced within the term of six months next after any loss or damage shall occur; and in case any such suit or action shall be commenced against the said co. after the expiration of six months next after such loss or damage shall have occurred, the lapse of time shall be taken and deemed as conclusive evidence against the validity of the claim thereby so attempted to be enforced.

The general framework of these conditions resembles that of the Brit. fire offices, with certain adaptations to the circumstances of the colony. The description of the property is required to be minute, and no "outside fittings" appear to be covered unless specifically insured. Fires arising from earthquakes, hurricanes, and spontaneous combustion, are excluded. "Other ins." must be noted, and the co. may cancel pro rata; or in case of a loss, the co-insurers must pay ratable proportion. Reinstatement provided for, with a very proper qualification, to meet cases of difficulty. Damage to furniture, etc., removed contrary to agent's advice, not covered. If any co-insurer's pol. subject to average, this pol. to be also subject to it.

Under the *Ins. Ordinances* of different countries, where fire pols. are provided for, they will be noticed. [AVERAGE POL., *Fire.*] [CONDITIONS OF INS.] [FIRE INS., CONDITIONS OF.] [FIRE INS., CONTRACT OF.] [OPEN FIRE POL.] [SPECIFIC FIRE POL.] [POLICIES OF INS.]

FIRE INS. POL., ACTIONS ON.—See ACTIONS UPON POL. OF INS.; also FIRE INS. LOSSES, PAYMENT OF.

FIRE INS. POL., ALTERATIONS IN.—Questions regarding the alteration of fire pol., from a legal point of view, very rarely arise in the U.K. All alterations are made by indorsement, generally under the direct sanction of the management; or at the head office. The principles which govern these have been briefly referred to under ALTERATION OF POL.; and CORRECTIONS OF POL. In the U.S., where agents possess usually a much wider power, and indeed themselves issue, and afterwards alter pol., many points of importance have arisen.

In *Gloucester Manuf.* Co. *v. Howard* Fire Ins. Co. (1855), the facts were these. The agents of the Co. were furnished with blank pol., which were to be filled up, indorsed and issued at their discretion; and their power as to the rate of prem., the amount of the risk, and the nature of it, was unlimited. The pol. in this case was filled up and countersigned by the agents on the 14th Oct., but was not delivered, nor was the prem. paid until the 8 Dec. following, when, on demand of the insured, a memorandum was indorsed on the pol. materially changing the risk:—*Held*, that these agents being clothed with general powers as to filling up and issuing pol., and having authority to make an original contract of ins. with terms similar to those found in this pol., had authority before the delivery of the pol. to enlarge from its first draft by a change or modification of the description of the property insured, so as to embrace the case of a building unfinished, but then in process of construction; and that the omission of the agents to communicate the change made to their principal did not affect the liability of the Co. on the pol. [5 Gray, Mass. 497.]

In *Washington* Ins. Co. *v. Davidson* et al (1868), an alteration was made in the pol. by a clerk (whose authority was at the time of action denied) before the prem. was paid, and a corresponding correction made in the record book of the pol.:—*Held*, such entry in the record book is constructive notice to the Co., and as binding upon them as actual notice. [30 Md. 91.]

Mr. Griswold, in his *Fire Underwriter's Text-Book*, 1872, states the following to be the practice upon this subject; but he does not refer to authorities in support:

959.—*Alterations* duly inserted in the pol. by the underwriter, without any new signatures, will be valid if assented to by the insured, though [the assent be] merely verbally. But an alteration by the insurer, without the assent of the insured, will not affect the pol.; it will still be valid as orig. made.

960.—An agreement in writing, *signed by both parties*, after the subscription of the pol., may declare what shall be the construction of a particular clause or word in a pol.—although the construction so declared may be essentially different from that which must have otherwise been adopted—and will have the same effect as if it were inserted in the pol.

961.—A material alteration of the pol. by the insured, whether by *erasure*, *interlineation*, or *addition* in a blank space, without the consent of the underwriter, destroys the pol. as to such underwriter, though done without fraudulent purpose, but with the intent to obtain such consent. An *immaterial* alteration, if honestly made, *does not* annul the contract.

962.—Striking the pen across words without obliterating them, so as to make them illegible, and writing others in their stead, with consent of the underwriter, is a cancelling of such words.

963.—*Whatever may be the character or object of the alteration, it is necessary to be attested by the same evidence as the orig. contract*, i.e. *the signature of the insurer; and when such alteration is to the prejudice of the insured, or imposes upon him a new obligation, his signature is also requisite, especially if contained in a separate instrument.*

964.—Other underwriters may be substituted for the orig. insurers for any part, or the whole, of the amount insured, by indorsement duly executed by the substituted underwriter, with the verbal consent merely of the insured.

965.—When the pol. is altered for the purpose of varying or enlarging the risk, the obligation to disclose all the material facts then known exists to its full extent; *and the effect of a concealment that renders void the altered portion is not to restore the orig. contract, but to annul the pol.*

966.—When there has been manifestly an alteration of a *parol instrument* (without seal), the party claiming under it must explain the alteration.

967.—The alteration of the pol. by another person than the insured, without his consent or privity, is termed *spoliation*, and does not render the pol. void.; *but all such spoliations are invalid, and will not avoid the instrument even if material, if the orig. words can be restored with certainty.*

The further consideration of the question arises under other heads, as Consummation of Contract; Construction of Ins. Pol.; Cancellation; Errors of Fact; Parol Evidence; Reform of Pol.; Renewal and Suspension of Pol.; Written Portion of Pol.

FIRE Ins. Pol., Arbitration under.—Some nice questions have from time to time arisen regarding the power to enforce the arbitration clause in pol. of ins., and the scope of the clause when brought into play. The subject is reviewed fully under Arbitration. See also Fire Ins., Conditions of, No. 11 of the conditions of the Brit. Tariff F. Offices, as there given under date 1870.

According to *Scotch Law*, a valid arbitration is only possible where arbiters have been named in the original contract. This being almost impossible in the case of fire ins. pol. which may exist for a great number of years, there is no recourse in the event of dispute but an action at law. This operates prejudicially to the interests of the Scotch fire offices, and no doubt frequently induces them to pay claims which they do not regard as entirely just.

FIRE Ins. Pol., Assignment of.—Under Assignment of Ins. Pol. we have stated the law of Gt. Brit. regarding the Assignment of Fire Pol. The law, however, becomes a good deal modified by the course of practice—of which it is but the exponent. Under Fire Ins., Conditions of, we have shown some of the questions which arose in early times in regard to the Assignment of Fire Ins. Pol.; while under Fire Ins. Losses, Payment of, other points are noted.

In Bankruptcy, questions constantly arise regarding the beneficial interest under fire pol. which have been assigned. [Bankruptcy.]

In practice no assignment is regarded by ins. offices as valid unless assented to by the co., and indorsed on the pol. [Fire Ins. Pol.]

In the case of *London Investment* Co. *v. Montefiore* [Chairman of *Alliance*], before the Court of Queen's Bench in 1864, it appeared that a person named Page had borrowed from the plaintiffs the sum of £130, and had assigned the lease and pol. of ins. on certain premises as a security, but no notice had been given to the ins. office, and therefore no indorsement on the pol. had been obtained:—*Held*, that where a pol. has been assigned, the insurers, in the absence of any express contract to do so, are not bound, upon the application of the assignee, to pay him upon the pol. [9 L.T. N.S. 688.]

In the U.S. it is the practice for F. pol. to contain printed on the back the following forms:

1.—*Assent of the Co.*—The . . . Fire Ins. Co. hereby consent that the interest of . . . in the within pol. be assigned to . . . subject nevertheless to all the conditions therein contained [date] . . . 187–. Signed on behalf of the Co. . . .

2.—*The Assignment*: For value received . . . hereby transfer, assign, and set over unto . . . and . . . assigns all . . . title and interest in this pol., and all the advantages to be derived therefrom. Witness . . . . hand and seal, this . . . day of . . . . 187–. Sealed and delivered in the presence of . . . .

FIRE Ins. Pol., Average Clause in.—See Average Policies, *Fire*; Fire Ins. Practice, 1734.

FIRE Ins. Pol., Charges for.—It was the practice of the early fire offices to charge the insured a fee for preparing the pol., as well as for the stamp upon it. The competition existing early in the present century was the means of abolishing the charge for the pol. The reduction of the stamp duty in more recent times (1865) has led to the abolition of all charges for fire pol. The early charges will be noted in our art. Fire Ins. Prems.

FIRE Ins. Pol., Compound.—The fire ins. pol. issued in the U.S. under the designation of "Compound" pol. are in all essential particulars the same as the "Floating" pol. issued in the U.K. For an account of the incidents which arise under them in the event of loss, see Fire Ins. Loss Apportionments.

FIRE Ins. Pol., Floating.—A very large proportion of the ins. on merchandize is effected by means of "Floating Pol.," the nature and incidents of which will be explained under Floating Pol., *Fire*.

FIRE Ins. Pol., Short-Term.—Short-term ins., as for one month, or 3 months, are frequently issued for specific sums, on specified goods, as supplemental to ann. or floating pol. [Short-Term Pol., *Fire*.]

FIRE Ins. Pol., Specific.—See Fire Ins. Losses, Apportionment of; and Specific Pol., *Fire*.

FIRE Ins. Policies, Stamp Duty on.—The following T. gives a chronological abstract of the various Acts imposing and changing the Stamp Duties on Fire Ins. Pol.:

1694.—The 5 Wm. & Mary, c. 21 (sec. 3), enacted that for every piece of vellum or parchment or sheet of paper upon which any policy of ins. should be engrossed or written, the sum of *sixpence* stamp duty was to be paid for 4 years. [Continued by several Acts, and made perpetual by 1 Geo. I. stat. 2, c. 12, sec. 8; but repealed by 44 Geo. III. c. 98, sec. 1.]

1698.—By 9 & 10 Wm. III. c. 25, an add. 6*d.*, making 1*s.* [Made perpetual by 1 Geo. I. stat. 2, c. 12; but repealed by 44 Geo. III. c. 98, sec. 1, and 48 Geo. III. c. 149.]

1711.—By 10 Anne, c. 26, the sum of 2*s.* 4*d.* add. duty was imposed upon all pol. of ins. for 32 years from 1 Aug. 1712—making 3*s.* 4*d.* No unstamped pol. to be used in any proceedings in Law or Equity.

1713.—By 12 Anne, stat. 2, c. 9 (sec. 21), an add. 6*d.* was imposed upon pol. of ins. for 32 years—making 3*s.* 10*d.* [Pol. were not specifically named in the Act, but 5 Geo. III. c. 35, declared them to be included.]

1757.—By 30 Geo. II. c. 19, an add. 1*s.* was imposed upon pol. of ins., although again they are not specifically named. [The Act 5 Geo III. c. 35, remedied this defect.] But the 2*s.* 4*d.* duty of 1711 would have expired; the duty would therefore be 2*s.* 6*d.*

1765.—By 5 Geo. III. c. 35, an add. 2*d.* on every pol. of ins. in Lond. or Bills of Mort.; and in other parts of Gt. Brit. 2*s.* 6*d.*—making in the one case 2*s.* 8*d.*, in the other 5*s.*

1776.—By 16 Geo. III. c. 34, an add. 1*s.* is levied on all pol. But the stamp duty under Act of 1713 had expired; the duty was therefore 3*s.* 2*d.* and 5*s.* 6*d.* respectively.

1777.—By 17 Geo. III. c. 50, an add. 5*s.* is imposed upon pol. of £1000 and upwards. And by sec. 24 there is a penalty of £10 for signing and sealing a pol. not duly stamped. Hence Town pol. for £1000 and upwards required a stamp valued at 8*s.* 2*d.*; and Country pol. 10*s.* 6*d.*

1786.—By 34 Geo. III. c. 3, of stat. of *Irish Parl.*, a stamp duty of 2*s.* 6*d.* is imposed upon all pol. of ins. issued in Ireland.

1797.—By 37 Geo. III. c. 90, all former stamp duties (stated by Act to be 6*s.* and 11*s.* respectively) were repealed, and instead thereof the following: under £1000, 3*s.*; £1000 and over, 6*s.*

1804.—By 44 Geo. III. c. 98, all former duties repealed, and instead thereof a stamp duty of 1*s.* on all pol.

1808.—By 48 Geo. III. c. 149, former stamp duty repealed and re-enacted: 1*s.* on every fire pol.

1810.—By 50 Geo. III. c. 35, any person in Gt. Brit. might insure property in any of the islands, settlements or territories of H.M., or in the West Indies, without taking a licence. Stamp duty, 2*s.* 6*d.* p. £100, beyond ordinary pol. stamp of 1*s.*

1815.—By 55 Geo. III. c. 184, all former duties were repealed, and a stamp duty of 1*s.* per £100 imposed on home pol.; and 2*s.* 6*d.* on colonial pol. with 5*s.* ann. duty.

1833.—By 3 & 4 Wm. IV. c. 23, pol. on *Farming Stock* were exempted from all stamp duties. Separate pol. to be issued.

1842.—By 5 & 6 Vict. c. 82, the stamp duties on Fire Ins. in *Ireland* were assimilated to those of Gt. Brit. for a period of 3 years. [IRELAND.]

1856.—By 19 & 20 Vict. c. 22, it was provided that all property in the U.K. insured in *Foreign Ins. Offices* should be chargeable with the duties payable in the U.K.

1860.—By 23 & 24 Vict. c. 111, policies insuring workmen's tools for any sum not exceeding £20 to be exempt from duty. Separate pol. or distinct sum named.

1865.—By 28 & 29 Vict. c. 30, the stamp duty on fire pol. was reduced to 1*d.*; and duty of 1*d.* imposed on deposit note.

1869.—By 32 & 33 Vict. c. 14, the per-centage duty entirely abolished. The stamp duty of 1*d.* per pol. continued.

Mr. Geo. Coode, in his *Revised Rep. on Fire Ins. Duty*, 1863, says:

> This stamp duty on the pol. of fire ins. underwent great changes during the first 110 years of its existence. At the beginning it was 6*d.* on the pol. whatever the amount insured, whether £10 or £100,000, or any other sum. Once paid, this duty was not payable again so long as the pol. continued in force; and this has always been the character of this stamp duty, through all the changes which it has undergone. It must, at the rate of 6*d.*, have been without any appreciable effect on the practice of ins. for all considerable amounts, and was probably without any influence at all, even on ins. of the lowest amounts, so long as the prems. of ins. remained, as they were in the beginning, extravagantly high.
>
> The duty was, however, advanced gradually, till in 1775 it was 6*s.* on pol. of all amounts, a tax still weighing not very heavily on the other modes of ins., but certainly very burdensome at the first step in effecting of fire ins. of the smaller amounts, being of itself equal to the prem. on an ins. at common risk, at present rates, of £400. An add. duty was at the same time laid on all ins. of £1000 and more, still being a duty not very onerous on marine and very light upon life assu., but upon fire ins. averaging about 75 p.c. in the first year upon the prem. on common risks, falling comparatively lightly, however, on ins. of the greater amounts.

Mr. Coode, as we have elsewhere explained [FIRE INS., (PER-CENTAGE) DUTY ON], was an advocate, or at least a defender of the fiscal burdens which until a recent period were inflicted upon fire ins. in the U.K.

It was not till 1809 that a separate account was kept of the stamp duty yielded by fire ins. pol., the stamps being until that date the same on marine and on life pol. At the above date the stamp was 1*s.* per pol., and the amount yielded to the revenue was £4277, which implied the issuing of 85,540 pol. In 1861 the amount of the stamps had increased to £13,461, which implied the issuing of 269,220 pol. The following table gives the amount received from stamps for each intermediate year:

A Return of the Amount of Duty of 1*s. received for Fire Pol. Stamps in England from the Year* 1809 (the first year when a separate account of the produce was kept) *to* 1861-2.

Year.	Amount of Duty Received.	Year.	Amount of Duty Received.	Year.	Amount of Duty Received.
	£		£		£
1809	4277	1827	5487	1845	7615
1810	3953	1828	4333	1846	7448
1811	3935	1829	5053	1847	7807
1812	3647	1830	5299	1848	7231
1813	3519	1831	5799	1849	7948
1814	3234	1832	4784	1850	8126
1815	3391	1833	4412	1851	8798
1816	3576	1834	5541	1852	9148
1817	3544	1835	5125	1853	10009
1818	3795	1836	7337	1854	10679
1819	3862	1837	5833	1855	10505
1820	3744	1838	6134	1856	11475
1821	4584	1839	5799	1857	11376
1822	5399	1840	6694	1858	14118
1823	4294	1841	6237	1859	13090
1824	5052	1842	6172	1860	12975
1825	6206	1843	7750	1861	13461
1826	5282	1844	7577		

The proceeds of the stamp duty on fire pol. appear to have borne the relation of about 1 p.c. to the proceeds from the per-centage duty.

It was the practice of the fire cos. in modern times to pay the stamp on the pol. in the case of ins. for £300 and upwards; and for the insured to pay it on smaller sums. The reduced stamp duty of 1*d.* is paid by the office in all cases.

Questions have arisen as to how far, having regard to the preceding Stamp Acts, any agreement to hold property indemnified against the risk of fire was legal, unless expressed in a duly stamped pol. of ins. In *Ex parte Bateman*, 1856, it was decided that there is no illegality, arising from the effect of the Stamp Acts, in an agreement by a bailee to be responsible in case of fire for the goods entrusted to him, and the measure of responsibility would be the value of the property burnt, ascertained as if under a contract to keep it insured for the benefit of the bailor. (2 Jur. N.S. 265.)

FIRE INS., PRACTICE OF.—While some of the preceding art. contain all that we have to say upon the particular points of practice to which they relate, it yet seems desirable to take a general survey of the development of the practice, following, as best suited on the whole to our plan and purposes, a chronological arrangement.

1667.—There seems reason for believing that at this date, if not earlier, the bus. of fire ins. was carried on by individual underwriters, as marine ins. had been, prob. for several centuries, and as it still continues to be. Fire ins., from the smallness of the prem. in relation to the bulk of the risks, was hardly suited to this method.

A scheme of *Municipal Fire Ins.* was set on foot in *Hamburg* this year.

1680.—The first fire ins. asso.—that is, an asso. as distinguished from municipal or state organization—was formed in this and the succeeding year in Lond. It was a joint-stock enterprise, *i.e.* carried on at the pecuniary risk of its founders, without any special legal or corporate powers; in fact, it was regarded in the eye of the law as a mere partnership, trading with a joint-stock cap. This was *The Fire Office* [afterwards *Phœnix* No. 1]. As we have never seen a copy of the pol., or even of the early "proposals," of this Asso., we cannot speak of the points of practice exhibited therein or thereby. But we know that whereas the scheme was first settled in view of re-building, *i.e.* of re-instating the damage done to the houses insured, it was very soon afterwards (1681) resolved that "the loss must be satisfied in money." This it appears was on the advice of counsel, and "thought necessary to avoid those disputes which might arise about the dimensions, form and substantialness of building."

The value of buildings for the purpose of ins. was estimated in relation to each £1 of rent; and the shortest term of ins. appears to have been 7 years. (See 1700.)

It is believed that the credit of founding fire ins. offices upon the strict mercantile principle of a fixed payment in the event of loss for a fixed ann. prem. belongs to England. The *principle was adopted by this pioneer co.*

1681.—The scheme of the Corp. of Lond for Ins. Houses was perfected this year. Its new feature was ins. were granted (1) for terms of years ranging from 1 to 100, and (2) perpetual fire ins. were granted. [FIRE INS., PERPETUAL.] The pol. embraced provisions for reinstatement of houses destroyed or damaged. [FIRE INS. POL., 1681.] There appears to have been a fee of 2*s.* 6*d.* charged for the preparation of pol.

In each of these schemes the prem. for timber-built houses was double that for brick-built ones. Merchandize and household effects were not insured [see 1704]; nor were ins. granted outside Lond. and its suburbs. (See 1710.)

It is to be observed that a principle incident to Marine Ins., viz. that of making a deduction of one-third of the amount where old materials are replaced by new, was not incorp. into the practice of Fire Ins. [REINSTATEMENT.]

1683.—The scheme of the Corp. of Lond. having fallen through, there was this year set on foot the *Friendly* Fire Office—a project constituted on the *mutual principle*, wherein the members were only called upon to make a deposit sufficient to cover current working expenses: the losses were to be provided for as they arose, by means of calls or assessments on members, *i.e.* the pol.-holders.

The scheme of this So. is set forth fully under title FIRE INS., HIST. OF, at this date; whereby it appears (sec. 2) that *one house only was to be insured by each pol.*—a plan which had been pursued by the Corp. of Lond. There were also full provisions regarding reinstatement of buildings burned or damaged; and a distinction regarding party-walls. *All prems. to be paid within* 40 *days after they became due.*

It may be considered that the regulations of this Asso. first introduced what we now know as "Conditions" in Fire Ins.—See FIRE INS., CONDITIONS OF.

1694.—It was in this year that stamp duty was first imposed upon pol. of ins.; not only F. pol., but all others. This prob. led to the adoption of a form of *ins. pol.* as distinguished from a deed. [FIRE INS. POL., STAMP DUTY ON.]

1696.—This year, or the preceding, the scheme of the *Hand-in-Hand* Fire was perfected. It, like its immediate predecessor, was a scheme of "mutual contribution"; but it appears to have differed from the *Friendly* in this respect, that it required the payment down of 7 years' prem. and 7 years' deposit, and that the insured should sign the D. of Sett. before any pol. could be granted. There was to be a *yearly dividend* of profits arising from the investment of these deposits. The members were to pay *2s. 6d.* for their pol. and the stamp duty. Only one house was to be included in any one pol. No house, chamber, or room was to be insured "until fully finished and tenantable," and the mark of the office affixed thereto. [FIRE INS. OFFICE MARKS.]

This office insured for specific sums on buildings. Its pol. contained a proviso that not more than 3*s.* per square yard was to be allowed "for any painting whatever"; nor more than £30 for any marble chimney-piece. [*Hand-in-Hand* INS. SO.]

1700.—The *Phœnix* No. 1 modified its scheme, and now issued pol. for *one year*, or for 2, 3, 4, or 7. It also adopted a scheme of mutual contributionship ins.

1704.—This year F. Ins. was extended to the protection of "household goods" and "trading stock." This was by the *Lombard House* scheme, of which we have given details under title FIRE INS., HIST. OF. It was in connexion with the working of this scheme that the "classification of risks" in fire ins. first assumed any shape beyond the primitive classification of "brick" as against "timber" built houses. [FIRE INS., CLASSIFICATION OF RISKS·IN.] New conditions in relation to its wider scope of bus. were also intro. [FIRE INS., CONDITIONS OF.]

1706.—The *Friendly* So. this year undertook to register transfers [i.e. *assignments*] of its pol. (See 1721.)

During this year there was set on foot Mr. Charles Povey's *Exchange House* Fire Office, wherein for the first time we meet with "quarterly fire prems." [FIRE INS. PREMS.] (See 1710.)

1710.—The practice of Fire Ins. made a very considerable advance in some respects this year, on the estab. of the *Sun* Fire. This Co. undertook the ins. of, in addition to houses, "movable goods," "merchandizes," "furniture" and "wares," throughout the kingdom [although, at first, not in Lond.]. The "proposals" of the Co. are set out at large under FIRE INS., HIST. OF. The Co. did not at first grant any ins. beyond £500; and distinct pol. had to be taken out for the house, and the furniture and effects therein; as also for the furniture and effects of each particular tenant. It adopted a remarkable feature in regard to its claims, clearly based upon that of the *Amicable* So. for Lives, viz. that at the end of each quarter the money in the bank was to be divided among the claimants of the quarter in "proportion to their respective losses, not exceeding £500 for each pol." This appears to have been a retrograde movement; but it may have been deemed at the time more satisfactory than the schemes of the mut. contribution asso. of that period.

There was another feature also, openly stated in the "proposals," viz. that 5 p.c. was to be deducted from claims paid "for defraying the charge and expenses of officers and others employed to make inquiry how and by what means the fire happen'd, *as is usual with other fire offices.*" The plan of making an abatement in the shape of a per-centage from the amount of claims originated in *Marine* Ins. There is no doubt that such deductions were made (very rarely exceeding 3 p.c.) from fire claims, not only in the U.K., but also in various parts of Europe, and in the American colonies. In the schemes of the preceding Lond. cos. there was no reference to any such deduction. [FIRE INS. POL.]

Printed "renewal receipts" appear to have been first issued by this office. [RENEWAL

PREMS., *Fire*.] And it was required that "notice of removal" be given, when a new pol. would be issued, for which the stamp only would be charged. [NOTICE OF REMOVAL.] The time allowed for payment of quarterly prem. was 10 days. [DAYS OF GRACE.]

1714.—This year was founded the *Union* Fire, as a mut. contribution asso. [modified in the following year by the estab. of a Guarantee Fund]. This Asso. undertook the ins. of merchandize, wares, goods, etc. [but not furniture], within the Bills of Mort. The new points in practice were (1) that "double ins. made the pol. void;" (2) "earnest money" was charged at the rate of 10*s*. p. pol. before any survey for ins. was made. This was afterwards credited towards ordinary charges on pol.

It is clear from this that the practice of *surveying risks* before acceptance had been found necessary.

1717.—The *Westminster* Fire was founded this year, as a mut. contribution office. It insured for specific sums for terms of 7 years, the prem. paid down in advance; and with an ann. dividend to pol.-holders.

1720.—The *Friendly* Fire, founded in *Edinburgh* this year, embraced several points of practice rendering it analogous to the schemes of MUNICIPAL AND STATE INS. already spoken of: 1. The ins. might be *perpetual*. 2. The liability to contribution, as also the parti. in the profits, was to be "inseparably annexed to the tenements, houses, etc., insured." 3. The directors were to visit all the property insured, in order "that a just and equal value be put thereon before recording," *i.e.* before insuring. [FRIENDLY FIRE INS. SO. OF EDINBURGH.]

1721.—The *London Assurance of Houses and Goods from Fire*, founded this year, introduced various important changes into the practice of the bus. It ins. up to £2000, but charged a higher prem. for all sums above £1000. [FIRE INS. PREMS.] It enlarged the classification of risks; it insured "goods held on commission," but excluded from ins. various items not formerly excluded. It insured, by "special agreement," things not otherwise insurable; it admitted 2 risks in any one pol., upon condition that the amount on each was defined. For details on these points, see FIRE INS., CLASSIFICATION OF RISKS IN; FIRE INS., CONDITIONS OF; FIRE INS., HIST. OF.

The question of *arbitration* under ins. pol. was placed upon a more distinct footing.

1722.—The scheme of the "*Royal Exchange* Co. for the Ins. of Houses and Goods from Loss or Damage by Fire" was perfected this year, and again considerable advances were made towards perfecting the practice of F. Ins. For the full measure of these improvements the reader should consult the several titles last named. The limit of ins. was £1500 on any one house or building. The "days of grace" for renewal of pol. were limited to 14, at which they have since remained. [GRACE, DAYS OF.]

The system of classification of risks introduced by this Co. was in advance of anything previously adopted. [FIRE INS., CLASSIFICATION OF RISKS IN.] It was announced that "*the full value of houses and goods might be insured.*" No deduction was made from claims.

The Corp. extended its operations, not only through *England* and *Ireland* [not *Scotland*], but to "*all other parts of H.M.'s dominions beyond the Seas.*" This was prob. the first instance in which such extended geographical limits had been adopted in regard to Fire Ins. The rates appeared to be the same for foreign as for home risks. [FIRE INS. PREMS.]

1726.—The *Sun* Fire pub. a new set of "proposals," which are fully set out under FIRE INS., HIST. OF, under this date. Here again is a great advance in the points of practice, more especially in the direction of defining the true nature of the Fire Ins. contract, and the risk insured against. The sum insured was raised to £3000; but the principle of charging a higher rate for the larger amount was preserved. The requirements in respect of "proof of loss" were rendered more stringent (see Art. XI.). The finances of the Co. were now put on a more certain footing by the creation of a cap. stock of £48,000.

The system of quarterly prems., introduced by the *Exchange House* Fire Office, 1706, and adopted by the *Sun* in 1710, was discontinued this year in favour of ann. prems. It is more than prob. that the system of quarterly prems. gave rise to the practice, peculiar to the U.K., of ins. pol. expiring on the usual quarter-days.

1727.—The new proposals of the *Sun* Fire, issued this year, show much more exactitude than the former ones. No ins. was to be considered in force until *the pol. was actually in possession of the insured or his agent* (sec. iii.). Goods in trust or on commission might be insured, "though not the property of the person insuring, provided the same were declared in the pol. to be in trust or on commission, but not otherwise" (sec. ii.). Any number of houses or out-houses, or goods therein, might be insured in one pol., provided the sum insured on each was specified, and the aggregate did not exceed the limit on that class of risk (sec. v.). The *limits* of ins. were increased to £3000. If larger sums were required, or any "ins. more than ordinarily hazardous, *by reason of the trade, nature of the goods, narrowness of the place*, or other *dangerous circumstance*, a special agreement was to be made for the same" (sec. iv.). [FIRE INS. PREMS.]

1729.—This year arose the first case under a pol. of F. ins. reported in the English law-books—*Lynch* v. *Dalzell*. It placed the question of "assignment of pol." upon a more certain footing. [ASSIGNMENT OF INS. POL., *Fire*.] [FIRE INS., CONDITIONS OF.]

1731.—In the proposals of the *Hand-in-Hand*, issued this year, it is announced that ins. on buildings in Lond. and the district (including a 10 miles circuit) may be "*for any sum not exceeding three-fourths* of the value of the buildings, so far as £2000, but not higher upon any one house *without the consent of a meeting of contributors.*" We suspect a similar regulation had been introduced by other offices previously, having regard to the announcement made by the *Royal Exchange* in 1720, that the "full value of houses and goods might be insured." [PROPORTION OF VALUE INSURED.]

1734.—The *London Assu. Corp.* brought the "average clause" into play regarding the salvage, in cases of ins. of £1000 and upward wherein goods and merchandize insured were not wholly consumed. We suspect the earlier mut. offices had adopted the same course; but have no direct proof of it. The proposals of this Co., issued in 1721, had announced: "There is no average clause in the pol. of this asso.; but the assured in cases of loss receive the full damage sustained, deducting only 3 p.c., according to the terms of the pol." [FIRE INS. SALVAGE.] [AVERAGE POLICIES, *Fire.*] (See 1735 and 1782.)

1735.—The *Union* Fire this year announced that it paid its claims *without any deduction* for defraying charges; and also without enforcing *average.* It charged 3*s.* for the surveyor in cases of risk outside the Bills of Mort., in add. to prem. [SURVEYING FIRE RISKS.]

1738.—The principle of cancellation of unexpired fire pol. was this year introduced by the *Hand-in-Hand* Fire. [CANCELLATION OF INS. POL., *Fire.*] [FIRE INS., CONDITIONS OF.]

1743.—In the case of *Saddlers* Co. v. *Badcock,* the question of insurable interest arose. Lord Chancellor Hardwicke expressed his opinion, since acted upon, that "ins. must cease with the interest of the insured." [FIRE INS., CONDITIONS OF.] [FIRE INS., HIST. OF.] [INSURABLE INTEREST.]

1744.—At this date "valued pol.," *i.e.* pol. under which the whole amount insured is paid without question on the destruction of the property, were issued in Holland. We believe the dangerous practice of issuing such pol. never prevailed in the U.K. They have been issued in the U.S. in later times. [VALUED POL., *Fire.*]

1763.—There was enacted the 4 Geo. III. c. 14, which gave legal authority to the fire offices to apply sums insured in reinstatement of the property; and when called upon to do so by persons interested, made it compulsory. [FIRE INS. LOSSES, PAYMENT OF —sub-heading *Reinstatement.*] [REINSTATEMENT, *Fire.*]

A question was raised at a later date as to whether the operation of this Act was not limited to Lond. only. It was decided that its operations were general. [FIRE INS. LOSSES, PAYMENT OF—sub-heading *Tenants.*]

1767.—The question of the liability of ins. cos. for property burned by a mob arose this year in the case of *Drinkwater* v. *London Assu. Corp.* See CIVIL COMMOTION; also FIRE INS., CONDITIONS OF. (See 1780.)

1774.—The first of the many "Building Acts" affecting the Metropolis was passed this year, we suspect very much in the interest of the fire ins. offices, the man. of whom had learned that the proper construction of buildings in regard to "party-walls," etc., formed an important element in the safety of risks. [FIRE EXTINGUISHMENT.] [FIRE PROTECTION.]

1777.—By the 17 Geo. III. c. 50, it was enacted that no action in Law or Equity could be maintained upon an unstamped F. pol., and a penalty of £5 was imposed for issuing the same. A point has been raised whether, in reference to this Act, warehousemen, wharfingers, etc., could legally enter into agreements with the owners of goods in their hands to hold them indemnified against loss from fire. It is held that they can do so —Ex parte *Bateman,* 1856.

1780.—The case of *Langdale* v. *Mason* was before the Brit. Courts this year, in reference to the liability of the F. offices for property burned during the "Gordon Riots." The question turned upon the sufficiency of the exemptions contained in the conditions of ins. [CIVIL COMMOTIONS.] [FIRE INS., CONDITIONS OF.]

1782.—This year was imposed, under 22 Geo. III. c. 48, the FIRE INS. DUTY, which, by reason of the many restrictions inflicted, apart from the fiscal restraint, much impeded the development of the practice: for instance, it became very doubtful whether "floating pol."—so essential for the protection of mercantile risks—could be issued at all, legally. *The days of grace were by this Act limited to* 15. [AVERAGE POL., *Fire.*] [GRACE, DAYS OF.] [FIRE INS., (PER-CENTAGE) DUTY ON.] [FIRE INS., HIST. OF.]

1786.—Fire ins. effected in Gt. Brit. upon property abroad were freed from payment of the ann. per-centage duty.

1787.—The first work treating upon the *Law of Fire Ins.* was pub. this year—Mr. James Allan Park's; but beyond laying down the principle that the "purest equity and good faith" are essential to the proper conduct of the bus., it did nothing to guide the offices in their practice.

1789.—It was decided in the case of *Routledge* v. *Burrell,* that the regulations and conditions contained in the printed "proposals" of the fire offices at this date in use were binding upon pol.-holders, and this although they were without stamp, seal, or signature. But as a matter of fact the "proposals" were usually referred to in the pol., and the date upon them stated. [Fire Ins., Conditions of.] [Fire Ins. Pol.] [Proposals.]

1794.—In the case of *Tarleton* v. *Staniforth*, in the King's Bench this year, it was held that where a fire occurred during the "days of grace," and the prem. had not been paid, the ins. office was not liable. The facts are fully stated under Days of Grace.

The Rev. David Wilkie pub. in Edinburgh a work on *Int. and Annuities*, wherein he attempted to justify the early practice of the fire offices in charging a higher prem. on larger risks, by showing that the risk of fire in the larger buildings, occupied by a larger number of tenants, was really more than proportionally greater. [Fire Ins., Hist. of.] It was about this date, however, that the offices left off the practice in question. (See 1804.)

1795.—In *Wood* v. *Worsley*, before the English Courts this year, the right of the office to a "certificate" from the minister, churchwardens, or others, pursuant to conditions of the pol., was upheld. [Certificate of Loss, *Fire.*]

1797.—The *Minerva Universal* Fire, founded this year, introduced the practice (in regard to its own pol.) of paying not only the sum insured in the case of total loss on the risks of tradesmen, shopkeepers and manufacturers, but an add. 10 or 12½ p.c. if the premises were damaged in such a manner that the insured could not continue to conduct his bus. therein. This was a species of gratuitous *Rent Ins.* The office also made an abatement in the case of prems. paid for more than one year.

In the case of *Mildmay* v. *Folgham*, before the Brit. Courts this year, a further question arose regarding assignment of fire ins. pol. [Assignment of Pol. of Ins.] [Fire Ins. Pol., Assignment of.]

1804.—The plan of charging an increased rate on the same class of risk for large limits, which had prevailed from the very commencement of the bus., was now generally relinquished. This was mainly in consequence of the estab. of the *Globe*, the *Imperial*, and some other cos. with large capitals. [Fire Ins. Prems.]

1805.—The *Westminster* Fire Office (founded 1717), this year introduced a new and extended classification of risks, which we have already set out in detail under Fire Ins., Classification of Risks in.

A further point regarding "days of grace" arose out of the case of *Salvin* v. *James*, before the Brit. Courts this year. [Days of Grace.] [Fire Ins., Conditions of.]

1807.—The *Eagle* Ins. Co., founded this year, had a fire branch, wherein several novelties in practice were introduced: (1) the *rent* of premises insured with the Co. and rendered untenantable by fire was to be paid without any add. prem.; (2) 10 p.c. reduction of premiums to persons insuring property *in the country*; (3) London waterside premises charged 6*d*. p.c. extra prem.; (4) damage by *lightning* covered. [Fire Ins. Prems.] [Lightning.] [Rent Ins.]

The *County* Fire, founded this year, introduced the "Mixed" principle to Fire Ins.—giving the pol.-holders participation in the profits without being liable for contribution towards losses.

1810.—By the 50 Geo. III. c. 35, the necessity for taking out licences in regard to insuring property in the West Indies against fire was dispensed with. [Fire Ins. Licences.]

1813.—In the case of *Watchorn* v. *Langford*, before the Eng. Courts this year, an important question arose as to what constitutes "stock-in-trade." [Fire Ins., Conditions of.] [Stock-in-Trade.]

1815.—The question of "concealment" in regard to fire ins. arose in the case of *Bufe* v. *Turner*, before the Eng. Courts this year. [Concealment, *Fire.*]

In the case of *Newcastle* Fire Ins. Co. v. *Macmorran*, it was held to be a first principle in the law of ins., *that a warranty must be strictly complied with, whether material or not.* [Description of Property Insured.] [Representations.] [Warranties.]

1816.—In the case of *Austin* v. *Drewe*, determined in the Eng. Court of Common Pleas this year, it was *held*, that an ins. "against all damage which the assured shall suffer by fire on stock and utensils in their regular built sugar-house" does not extend to damage done to the sugar by the heat of the usual fires employed for refining, being increased by the mismanagement of the assured, who inadvertently kept the top of their chimney closed. [Fire Ins., Risk insured against.] [Process of Manufacture.]

1820.—The *Sun* Fire introduced a fresh set of conditions—*probably the first that had been actually printed on its pol.*, as distinguished from its "proposals"—which help to elucidate the practice of Fire Ins. at this date. [Fire Ins., Conditions of.]

1821.—The *Beacon* Fire was estab. this year, and introduced several new features, of which we need in this place only mention the following: 1. Ins. of *trade profits* during the re-building after fire. [Trade Profits, Ins. of.] 2. The ins. of property for specific *terms of years or for lives.* [Fire Ins. for Terms of Years or for Lives.] 3. The insurance of landlords against consequences of misconduct of tenants in regard to placing hazardous goods, or carrying on hazardous trades in buildings insured. [Hazardous Goods.]

1825.—The *Atlas* Fire (founded 1808) extended its *classification of risks* into 5 classes, and varied its limits of ins. according to the class. [Fire Ins., Classification of Risks in.]

The *Union* Fire Office this year limited the amount of *gunpowder* to be deposited in property insured by it to 10lbs. Other offices followed suit. [EXPLOSIONS, sub-heading *Gunpowder.*] [GUNPOWDER.]

1828.—By the 9 Geo. IV. c. 13—*An Act for regulating the payment of Fire Ins. Duties*—each separate building insured under any one pol. was to have a specific sum insured upon it; penalty for default £100. If the *average clause* were contained in the pol., then the buildings might be insured collectively. [AVERAGE POL., *Fire.*] [FIRE INS., HIST. OF.] (See 1833.)

Mr. David Hughes, in his *Treatise on the Law relating to Ins.*, pub this year, gives an outline of the points of practice at this date, so far as they had been determined by the English Courts.

In the case of *Johnston* (or *Duncan*), pursuer, v. *West of Scotland* Ins. Co., defenders, heard before the Court of Session this year, a new point in the Law of F. Ins. was established. It was found by the verdict of the jury that a house protected by a pol. of ins. against damage by fire had been injured by the falling of the gable of another house in consequence of fire in that house:—*Held*, that the insurers were liable, although the house insured had not been on fire, and the gable of the other house had stood for two days after the fire was extinguished, and fell in consequence of operations on it, by order of the Dean of Guild, with a view to taking it down.

In the case of *The King* v. *Bolton*, before the English Courts this year, the defendant was convicted for conspiring to defraud the *Sun* Fire Office by means of fraudulent statements respecting amount of damage resulting from a fire. [FRAUDULENT CLAIMS.]

1832.—This year produced two works bearing upon the practice of Fire Ins., each quite original in design. 1. *Practical Remarks on the Present State of Fire Ins. Bus.: the Evils of Competition pointed out, with Hints for Improvement*, by Mr. F. G. Smith. 2. *The Law of Fire and Life Ins. and Annu., with Practical Observations*, by Mr. Charles Ellis. These works may be taken as an indication of the improvements in practice which were taking place at this date. [FIRE INS., HIST. OF.]

Mr. Smith, after dwelling upon the direct effect of *competition in rates*, proceeded to notice the *indirect* effect, as follows:

> The competition which causes the low rates brings *bad risks* and *doubtful customers*, together with a variety of evils, such as *wilful fires, lawsuits,* and consequent loss both of money and character, to the offices.
>
> The evil consequences of competition in this bus. are apparent to all who have had the adjustment of claims for loss by fire, particularly in the inducement it holds out to evil-disposed persons, and dishonest tradesmen and others to commit a crime that of late years has been but too common.
>
> It is an undoubted fact, that wilful fire-raising, and fraudulent and excessive claims, have been more prevalent during the last 7 to 10 years, than in all experience of ins. cos. anterior to that time. This is evidently one of the greatest evils of competition in this branch of bus., *which causes each co. to be so eager, or careful of fame, or, more properly speaking, so fearful of being thought illiberal or litigious by the public, as to induce them rather to submit to be cheated, and made to pay a fraudulent claim, than evince the least disposition to resist, or to endeavour to make an example much needed.* This is a concomitant evil on competition; its influence has been generally felt; and all offices, one time or other, have been obliged (in order to maintain a character for promptness and liberality) to settle claims, where serious misgivings have been felt as to the cause of the fire, and, in other cases where no grounds for suspicion as to the origin of the fire have existed, have had to contend with the most exorbitant and unfair claims.
>
> It may here be remarked, and it is an important fact, and an evidence of the evil alluded to, that of late years, scarcely in one case out of ten, where the fire has been of any consequence, could its origin be traced—at least not satisfactorily to the minds of the representatives of ins. cos. [FIRES CAUSED WILFULLY.]

1833.—*Farming Stock* Ins. were exempted from Duty. [FARMING STOCK INS.] [FIRE INS., HIST. OF.]

Mr. Geo. Beaumont published *The Law of Fire and Life Ins.*, wherein (chap. 8) was given some practical remarks regarding the *adjustment of fire losses*. These, valuable at the time, need not be now repeated. The points involved have been already considered under FIRE INS. LOSSES, ADJUSTMENT OF, and FIRE INS. LOSSES, PAYMENT OF.

1837.—The *North of Scotland* issued a new prosp. under this date, wherein a scheme of "agricultural stock" ins. upon a scale of "decreasing" amounts was set forth. [FIRE INS., CLASSIFICATION OF RISKS IN.]

1841.—In the *Practical Introduction to Life and Fire Assu.*, etc., published this year, Mr. Thomas Millar gave "a description of fire risks, with the rates of prem. demanded therefor." This was a very useful work, containing much information on points of practice. [FIRE INS. PREMS.]

1842.—Out of the adjustment of a series of heavy losses on mercantile risks in *Liverpool* this year originated the *Independent Liability Clause*, which remained in use until 1860, and was then abandoned. [AVERAGE POL., *Fire.*] [INDEPENDENT LIABILITY CLAUSE.]

1844.—The *supply of water* to large towns was considered in the *First Report of the Commissioners for Inquiring into the State of Large Towns and Populous Districts*, this year in regard to fire extinguishment, and also in relation to its effect in reducing the cost of fire ins. [FIRE EXTINGUISHMENT.] [FIRE INS. PREMS.]

1845.—*The Laws relative to Buildings, comprising the Metropolitan Building Act, Fixtures, Ins. against Fire*, etc., were pub. this year in a treatise by Mr. T. Chambers, and Mr. G. Tattersall. These will be reviewed under FIRE PROTECTION.

1846.—The Court Royal of *Rouen* this year decided that the damage occasioned to property in that city in the previous year by a tornado, accompanied by lightning, must fall upon the offices who had insured the property injured, under the terms of their pol. [Lightning.] [Storms.]

1849.—Out of the great fire at Messrs. Gooch & Cousins' wool warehouse this year arose some important points in practice regarding *Fire Loss Apportionments.*—See Fire Ins., Hist. of, this date, where the more material points involved are stated. [Fire Ins., Salvage in.]

1850.—It was about this date that several of the fire offices in *Hartford*, Conn., U.S., commenced the practice of sending out to their agents blank pol. signed and sealed, to be filled up and issued by such agents, without communication with the head office, otherwise than by sending in copies of details *after the pol. were issued*, except in the case of special classes of risks named in their instructions. The plan is *now* adopted by nearly all the fire offices in the U.S., and by many of the Brit. offices in regard to their foreign agents. (See 1852.)

1851.—Mr. C. J. Bunyon, M.A., contributed to the *Assu. Mag.* (vol. i.) a paper, wherein he discussed the *liability of the occupier of a tenement for damage done to that of a neighbour by fire kindled through his own or his servant's negligence.* [Fires Caused by Negligence.]

1852.—Mr. Mark Howard, President of the *Protection* (Fire), Hartford, U.S., prepared a set of *Instructions* for the agents of that Co., which evinced a greater practical knowledge of the bus. of fire underwriting than anything which had previously appeared. This may be said to be the first of that important series of practical treatises which has been prepared for fire agents and underwriters in the U.S. From the book now before us we take the following passages :

> The undersigned is especially directed by the board to call your attention anew to the responsibilities which are assumed by you as their agent, representing as you do the most important interests of the office—to wit, the inception of all its liabilities by the issue of its pol. Upon your course, according to our system of operations, depends the success of the office, even more than upon the officers of the Co. *Prior to the adoption by the Hartford Ins. Cos. of the system of sending out signed contracts, to be filled up and issued at the discretion of agents, the practice was unheard of, and was deemed, when introduced, a most hazardous experiment.* We trust, therefore, greatly to your individual judgment, in issuing these contracts, thus executed and furnished to you ; *and if your whole duty be discharged to the office, you will no sooner fill up, sign and deliver one of these contracts without mature consideration, than you would execute an individual bond or deed of conveyance without thoroughly comprehending its nature and effects, direct or incidental.*
>
> We are pleased, however, to feel well assured that your fidelity is fully equal to the responsibilities assumed; otherwise the board would not have been justified in continuing to entrust the Co.'s interests in your hands. *But a mere disposition to do right is not sufficient.* Two things more are necessary to secure your permanent success as an agent, viz.—1. That you should have the full benefit of the Co.'s experience. This desideratum is intended to be supplied by the present book. 2. *That in the use of a sound discretion you apply this general experience of the Co. to the local circumstances of your agency.* The office expects from you the exercise of your best judgment in every official act whatsoever, *well knowing that in a bus. so hazardous and uncertain as that of fire ins., losses far surpassing the prems. received must ensue, unless your acts are characterized by the same care, forethought and sagacity, as is used in bringing your private bus. to a successful issue.* With *such* a degree of intelligent and active fidelity, we shall feel that our interests are entirely safe in your keeping.
>
> It is our confident belief that the more carefully and constantly your attention is given to the annexed instructions, suggestions, and rates of prem., the more clearly will you perceive that they are the results of a well-digested experience, deduced from the good or ill fortune, not only of this, but of many cos. doing a general bus. of ins. by agencies ; and that a neglect of the principles, rates of prem., and prudential method, laid down in these pages, has, in respect to very many of these cos., been a fruitful source of misfortune both to themselves and the public. Let it then be your constant endeavour, so far as you are concerned, to avoid the repetition of their errors.

Under the head of "Moral Hazards" is given the following :

> The fact is unquestionable—it is estab. beyond a doubt, both by our own experience, and the experience of other offices—that pol. are often procured with the *deliberate intent to destroy the property insured, and thereby defraud the office.* Now when cases of this kind occur, it is often impossible to procure *legal proof* of the fraudulent intent, and it is then useless to resist the claim before a legal tribunal. *The only mode, therefore, by which an office can protect itself from successful fraud is to be doubly on its guard, at the time of receiving the application. We wish no pol. issued for any amount, however limited, upon any terms, to an individual of bad or doubtful character.* The propriety of this rule is clearly manifest, if the property upon which ins. is sought be within the exclusive control of the assured ; but it is no less applicable if the immediate possession and management has been transferred to a third party. Under such circumstances it will be found unsafe to discriminate between principal and agent. The experience of the office during the last few years demonstrates, indeed, that the proportion of direct fraud is sensibly diminishing. *It is now generally made to appear that the management of the property insured was entrusted to an agent*, interested only in the safety and permanence of the concern—that the principal rarely, if ever, inquired into the details of the bus., seeing it was well managed—that he was in fact, at the time of the fire, *absent on a journey, etc.* In many cases which have fallen under the obs. of this office, the guilt of the claimant has been artfully disguised through the intervention of agents, and it has been with extreme difficulty that the criminal suggestions and conduct of the real party in interest have been disclosed and proved. *We wish you, therefore, to decline the application of any individual of bad or doubtful character, although the property be actually out of his direct control.*

This publication will be noticed under other heads.

In the case of *Scripture* v. *Lowell Mut. Fire*, determined this year by the Supreme Court of Massachusetts, it was *held*, that an ins. against "loss or damage by fire" covers a loss arising in part from *explosion*, and in part from combustion of *gunpowder* on the premises. [Explosions.] [Fire Ins., Risk Insured Against.] [Gunpowder.]

1853.—Mr. Richard Atkins, of the *Sun* Fire Office, contributed to vol. iii. of *Assu. Mag.* a paper (the first of a series): *On the Settlement of Losses by Fire under Average Pol.*, which opens with the following passages:

> It is a point well worthy of observation, that while England has been for centuries past so eminently practical in every branch of commercial enterprise, there have been but few attempts made until lately to examine freely the well-worn rules of ins. bus. with a view to alteration. There has prevailed a general, and not altogether unwise, determination to let well alone, and quietly continue the system, however faulty, which experience had shown would lead to an ultimate and satisfactory profit. Our continental neighbours, however, and especially our friends in *Germany*, have in modern times set a better example; and the pages of this Mag. continually give striking proofs of the careful manner in which facts are now collected on every hand and brought forward for the purpose of scientific inquiry in all branches of the bus. of ins.
>
> There are, as is well known, two great varieties of pol., which are issued by fire ins. cos., viz. the *Average*, or, as they are sometimes named, the *Floating* pol.; and the *Specified*. The conditions of these two kinds are based upon widely different principles. The average pol. has its own peculiar and distinctive characteristics, applicable to the largest mercantile transactions; and yet it is a remarkable fact, that there does not exist any treatise for reference, or any embodiment of the laws by which such pol. are practically regulated.

Mr. Atkins in some measure remedied the deficiency of which he complained, by pub. his series of papers, of which this was the first, in a separate treatise; while Mr. Hore has also contributed a work on the subject (see 1866 and 1870). In our art. AVERAGE POL. (*Fire*), we have also given an outline of the pol. of that class. [FLOATING POL., *Fire.*] [SPECIFIC POL., *Fire.*]

1855.—In the first Rep. of the Ins. Commissioners for the State of *Massachusetts* relating to the bus. of fire ins. this year, there occurs the following passage:

> In consequence of complaints among members [of mut. fire. ins. asso.] that the practice of insuring the most hazardous and the least hazardous property in the same co. operated to the great disadvantage of those members whose property was of the safer class, the law provides that the "directors of mut. fire ins. cos. *may divide the property into four classes.* The pol. shall designate the class, and the assessments shall be made upon prem. and deposit notes belonging to the class in which the loss occurs; provided that no pol. shall be issued in a separate class until 100,000 dol. shall be subscribed to be insured in that class. The expenses of the co., not strictly applicable to either class, shall be apportioned to each class according to the amount of prems.; and in a division of the funds and returns of prem. and deposits, each member is entitled to receive his proportion of the funds belonging to the class in which he was insured." A few cos. have adopted the provisions of this law, and have perhaps secured to the members the benefits it was intended to afford. . . . .

This is only one of the many experiments which have been from time to time introduced in connexion with the bus. of fire ins. in the U.S.—some others of which we shall have occasion to notice as we proceed. [FIRE INS., FINANCE OF.] (See 1868.)

1856.—Mr. Thomas Miller contributed to the *Assu. Mag.* a paper entitled: *A Problem in Fire Ins.: To Apportion a given Loss on Property insured by Specific Pol.* This subject will be discussed under SPECIFIC FIRE INS. POL. The paper is a practical one. [AVERAGE POL., *Fire.*]

1857.—Mr. Richard Atkins contributed to the *Assu. Mag.* a further paper: *On the Settlement of Losses by Fire under Average Pol.* (See 1866.)

1859.—Two practical papers were read before the Inst. of Act. this year: 1. *A Chapter in Fire Ins.: "Specific" and "Average,"* by Thomas Miller. [*Assu. Mag.* vol. viii. p. 140.] 2. *On the Settlement of Losses by Fire under Specific and Average Pol., Separate and Combined.* [*Assu. Mag.* vol. viii. p. 146.] [AVERAGE POL., *Fire.*]

By 22 & 23 Vict. c. 35, passed this year, the Legislature edeavoured to render more uniform the practice under "Covenants to Insure." [COVENANT TO INSURE.]

1860.—There was enacted 23 & 24 Vict. c. 145—*An Act to give to Trustees, Mortgagees, and others certain powers now commonly inserted in settlements, mortgages and wills*—sec. 11 of which gives to mortgagees: "A power to ins. and keep insured from loss or damage by fire the whole or any part of the property (whether affixed to the freehold or not) which is in its nature insurable, and to add the prems. paid for any such ins. to the principal money secured, at the same rate of int." [MORTGAGEES' POWERS OF INSURING.]

During this year the 3rd sec. was added to what is now known as the "Average Clause"; and this add. has an important bearing in the adjustment of fire losses. [AVERAGE POL., *Fire.*] (See 1866.)

1861.—On the 22nd June, this year, occurred the ever memorable Tooley Street Fire. [FIRES, GREAT.] The adjustments of the losses occasioned by it led to some changes in practice. The principles of settlement now adopted may be briefly stated as follows: *The market price should rule in the case of goods actually held by the insured; but in case of sale by contract*, while lying, in default of payment, undelivered, the contract price would be taken as the valuation. This principle remained in force until 1865 or 1868, and was then abandoned. "After very ample experience, it was found to work in a way that called for immediate change."—Atkins, *Average Clause*, p. 85. Mr. Swinton Boult said before the Parl. Committee on Fire Protection, 1867, that the practice adopted in 1861 "was found to be full of danger." [FIRE INS. LOSSES, ADJUSTMENT OF, sub-heading "Rules."]

1862.—Mr. Thos. Paton pub. this year: *Compendium of the Law of Ins., comprising Marine, Fire, and Life Ins.* The practice as determined by the Courts of *Scotland* is here shown, as part of the general subject.

There was published in the U.S. this year, by Messrs. Littleton and Blatchley: *Digest of Fire Ins. Decisions of the Courts of Gt. Brit. and North America.* A well-conceived idea, showing the law on all the more important points of practice. As a first attempt, it was defective in some respects. Subsequent ed. have removed in some degree this objection. (See 1868 and 1873.)

The *Massachusetts* Ins. Commissioners (Messrs. Elizur Wright and Geo. W. Sargent), in their Rep. pub. this year, say:

> It should always be remembered that fire ins., however important as a balance-wheel to civilized industry, is a very costly inst. to the public as a whole. Though the aggregate of wealth would not prob. be so great without it, yet it takes away as well as adds. It not only consumes in the expense of management, *but makes the aggregate destruction of property by fire considerably larger, perhaps double.* And much of this extra loss falls on the uninsured. Weak, experimental cos., by their want of experience, system and skill, are much more productive of this extra loss than strong, well-estab. ones. They insure more uninsurable people. Or they are tempted to play the game of the Hamilton. A horde of ins. cos., with itinerant agents at a high commission, are almost as dangerous as Samson's foxes with torches tied to their tails among the standing corn. It is absolutely necessary to the safe management of a co. that its officers should know whom they insure as well as what. *And it is consequently important to the commonwealth that it should know who insures.* If too many cos. have been already chartered for this bus., there is nothing to be done but to encourage consolidation, so that the best tried judgment and skill may control the whole system.

1863.—Mr. Arthur C. Ducat pub. in Chicago, *The Practice of Fire Underwriting.* This work, from the well-known experience of the author, became exceedingly popular. It is indeed a most excellent book, and has passed through several ed. The author says in his preface:

> This work has been styled The Practice of Fire Underwriting; it is intended to make practice and matter of fact its leading features. My object is to place each risk upon its own merits, *giving a reason for everything*, with a proper charge for all defects in the building, and a fair deduction for all extra advantages in its favour; in fact, to lay the bus. in such a manner before the underwriter, that he can clearly demonstrate for himself *the first cost and real value of ins. in any given case.*
>
> The practice of horizontalizing rates—that is, to charge the same, or about the same rate on all buildings constructed of the same material (brick, for instance), is as absurd as it is general. It is unjust to all parties concerned—*discourages the erection of good—encourages the erection of poor buildings:* and is, in our judgment, one of the prominent causes for the sweeping fires which desolate American cities occasionally. *Discrimination in the rates of ins. against poorly constructed buildings would do much to prevent these great disasters.*

This, it will be noted, was written in *Chicago* eight years before the great fire! He proceeds:

> This whole work is but little to study; and surely, for one following the profession, a clear understanding of its contents should be but a small task. Under the head of surveys . . . . will be found the mode of estimating the rate on any given building: the T. of addition will give all add. charges above the basis rate on buildings. It must be remembered that the rate as per survey of buildings is for non-hazardous occupation only. Under the head "Classification of Hazards" you will find the charges to be added to rate on the buildings, when ascertained, for hazardous, extra-hazardous, or specially hazardous occupation, as the case may be. The "Exposure T." furnish a system for estimating the degree of hazard and the proper charge therefor, from any exterior exposure to the risk proposed for ins.
>
> It must be remembered that the *basis* on brick or stone buildings, occupied for bus. purposes, and for brick or stone dwellings, etc., are for such buildings as are described in the "Standard," and for *no other.* For any deficiencies in the walls, roof, or other details of construction, the charges provided in the T. of "additions" must in no case be omitted. A little experience will convince the agent *that a systematic method of estimating the rate is the most convenient, as well as the most satisfactory to all parties concerned:* (1) because it furnishes to the assured the *reasons* for the rate he is charged; (2) it furnishes the company the same reasons, showing that the rate is adequate—thus obviating all differences of opinion between the offices and agents concerning rates, and the frequent correspondence growing out of such cases—as well as the necessity of cancellation of pol., as is sometimes the case. At the first, this method may appear complicated and troublesome; but such is not the case. The charge for deficiencies in walls, roof, cornice, etc., will soon become entirely familiar, so that, even without reference to the book, the agent can make up a rate promptly, as well as correctly. There is then nothing to do but add for the occupation, and the exterior exposure.
>
> I have found a variety of opinions among local agents regarding the degree of hazard, and the proper charge for the same, from exterior exposure; and with the hope of approximating uniformity, in this also I have prepared T. for estimating the hazard from such exposures, illustrated by a few diagrams, to which I call your attention. The remarks respecting the survey will also apply measurably to this feature of the bus. Indeed, the proper estimate for exterior exposure is quite as important as any other part of an agent's duties. . . . *Guessing* at rates, and *guessing* at exposures, should be abandoned. Cos. and agents should know what they insure, and whether they obtain a fair rate for the risk undertaken in each case.

This was really the beginning of the system of *Schedule Rating*, the practical excellence of which is now generally admitted. [SCHEDULE RATING.]

1864.—In the *Companion to the Almanack* for this year was contained an excellent art., reviewing (*inter alia*) the points of practice in Fire Ins. These have been noticed under FIRE INS., HIST. OF, under this date.

1865.—The Metropolitan Fire Brigade Act, 28 & 29 Vict. c. 90, enacted this year, enlarged the powers of the Brigade in regard to destruction of property to stop the progress of conflagrations. See DESTRUCTION OF BUILDINGS TO STOP FIRE; also FIRE BRIGADES; FIRE EXTINGUISHMENT; FIRE EXTINGUISHMENT, EXPENSES OF.

Mr. Edwin Chadwick, in his Address on *Economy and Trade* this year, offered some criticisms on the practice of Ins. Asso. in the conduct of their bus., which have been quoted under FIRE INS., HIST. OF. [FIRE INQUESTS.] [FIREPROOF BUILDINGS.] [FIRE PROTECTION.] [OVER-INS.]

1866.—Mr. Richard Atkins, of the *Sun* Fire, published his little book : *The Average Clause : Hints on the Settlement of Claims for Losses by Fire under Mercantile Pol.* It embodies the several articles by this writer already quoted; and this is, therefore, a proper place to notice the book in more detail than before. Further, this was the first book of its class pub. in the U.K. The author say in his preface :

> The numerous fires in mercantile warehouses which have lately taken place have naturally given rise to multiplied discussions in the settlement of claims. The curiously interwoven combinations of our commercial system are, no doubt, well calculated to originate on every hand questions having, at least, the aspect of novelty. The money advances; the powers of the holders of dock and wharf warrants over pol. of assu.; the limitations and extensions of time for payment and delivery; the beginning and ending of responsibility between buyer and seller; are all fruitful sources of inquiries, partly legal, partly technical; the answers to which, however, involve the most important practical results.
>
> In add. to the class of questions just referred to, and not now to be in any way dealt with, a very fair crop of curious and even subtle inquiries have recently arisen in reference to the operation of the modern Average Clause in the settlement of mercantile claims. By far the greater part of these fortunately admitted of a comparatively easy solution, by appeals to the well-worn traditions of the past. Reverence for ancient and possibly unscientific usages has not entirely died out, and it was found to be the prudent course for all concerned to rely upon well-authenticated precedents for the rules of settlement.
>
> There are, however, as is generally known, portions of the clause in present use, which have not had the advantage of being tested by age. The third sec. of the existing clause dates only from the year 1860, when that important add., which has such a very marked effect on the settlement of claims, was first adopted and incorp. with the orig. clause.

Passing to the body of the work, we are soon face to face with important points of practice ; thus :

> There are, as is well known, two great varieties of pol. which are issued by fire ins. cos., viz. the *Average*—or, as they are sometimes named, the *Floating* pol.—and the *Specified*. The conditions of these two kinds are based upon widely different principles. The average pol. has its own peculiar and distinctive characteristics, applicable to the largest mercantile transactions; and yet it is a remarkable fact that there does not exist any treatise for reference, or any embodiment of the laws by which such pol. are practically regulated.
>
> In order to throw some light upon this most useful branch of fire ins. bus., it may be worth while upon the present occasion to state concisely the existing practice, and the rules actually in operation, in reference to average pol. . . . It is quite necessary, in the first place, to fix the attention closely upon the broad and important distinction already referred to, which exists in the settlement of losses under Average and Specified pol. These different, and not unfrequently contending principles, although very clear and simple when stated apart, become in some of the various combinations of pol. so strangely complicated, that a constant reference to first principles is needed in order to disentangle them.

He then speaks of the early forms of fire pol. [FIRE INS. POL.], and the limited range which they took ; and proceeds :

> The great peculiarity of these primitive pol., in undertaking to pay all loss that might happen within the fixed sum of the pol., irrespective of the amount of property actually at stake, or of any salvage that might be made, has, amidst many changes, descended to the present times, *and stamped a peculiar character on our modern practice*. The ordinary condition of pol. known as *Specified* pol. is to pay all the assured's loss as far as the entire sum insured, however short that may have been of the value of the property under the protection of the pol. *This rule consequently abandons the whole of the salvage as the property of the assured*, the only question involved under such pol. being the production of adequate proof of actual loss.
>
> The introduction of the Average or *pro rata* condition is of more modern date. It is prob. that this condition was introduced to meet the wants of the London merchants, who had then, as now, goods lying at the same time in different public warehouses, and on the quays, liable to sudden fluctuations and removals, which the owners sought to cover by what now pass under the title of average or floating pol.

The effect of these latter pol. in regard to salvage is, that a division has to be made between the insured and the underwriter, in proportion to the risks they have respectively run. [FIRE INS. SALVAGE.]

> The difficulties in the settlement of claims are in practice found to spring chiefly from the fact o the assured having effected pol. of different kinds upon the same property, *with different ranges of operation, and in various offices*. This may be done either through ignorance, or with the design of gaining some supposed advantage; but is almost certain to produce great complication in case of loss. The mixed, and often opposing liabilities of such pol. give rise to cases in which it is exceedingly difficult, if not impossible, to find a really equitable principle of adjustment. The result has been, that some most arbitrary and oftentimes conflicting rules have been forced into daily use in the practical adjustment of losses. These rules have now to be considered.

We do not propose to follow the author further. Under head of FIRE INS. LOSSES, ADJUSTMENT OF, and FIRE INS. LOSSES, APPORTIONMENT OF, we have already given an outline of the nature and scope of these questions.

Among the more important incidents in connexion with the practice of Fire Ins. in the U.S., was the constitution of the *National Board of Fire Underwriters* this year. That this body has done, and is doing, much to place the bus. upon a sound and profitable footing, is generally admitted.

This year, too, Mr. C. C. Hine, Editor of the *Ins. Monitor*, N.Y., pub. : *Fire Ins. : A Book of Forms, containing Forms of Pol., Endorsements, Certificates, and other Valuable Matter for the Use of Agents and Others;* one of the especial purposes of which was that of securing uniformity in practice. This book has passed through many editions, and has been of great service alike to agents and the offices.

The Ins. Commissioners for the State of *Massachusetts*, U.S., in their Report for 1866, say :

> It should never be forgotten *that ins. against fire has its dangers as well as its safety. The less*

ins. the fewer conflagrations. The less forcing there is in the system of getting bus., the fewer uninsurable people or risks will get insured. In no interest of civilization, perhaps, is there more need of something new than in the ins. of our combustible property against fire. There is very little reason in rejecting a scheme of improvement simply because it is new or untried. The guarantee should be of the best quality, so far as it goes, but there ought to be far better safeguards against over-ins. Fully insured men have too little motive to carefulness against fire, and it may fairly be suspected that the public suffers more from them than from all the burglars. The stock offices, on the whole, suffer very little from this cause, for fires raise rates as certainly as the moon does the tides. Though at common law over-ins. voids the pol., no ins. officer of experience will pretend to deny that claims are often paid where it is reasonably suspected rather than peril the credit of the co. by contesting them. In regard to mutual fire ins. cos., over-ins. is guarded against by statute, every proprietor being required to bear one-fourth of the risk of a total loss himself. Another safeguard is the interest every policy-holder has in the co. as a co-proprietor. If this does not prevent him from getting himself over-ins., it tends strongly to open his eyes and ears, and loosen his tongue against the over-ins. of his neighbours in the same co. [OVER-INS.]

1867.—The case of *Elliott* v. *Royal Exchange* Assu. Corp., before the Brit. Courts this year, raised the general question of the scope of the condition of fire ins. pol. regarding "arbitration." The case has been reviewed under ARBITRATION. [FIRE INS. POL., ARBITRATION UNDER.]

An investigation into the experience of some of the leading fire offices of the U.K. this year—induced by the bad experience of the preceding three years—led to a decided belief that a new danger had been incorp. into the bus. by the extended use of *Petroleum* in its varied forms: as also that *incendiarism* was playing an increasing part in the origination of fires. [FIRE INS. PREMS.] [MINERAL OILS.] [PETROLEUM.]

A Select Parl. Committee sat this year to consider the then existing Legislative provisions for the protection of life and property against fire in the U.K. The practice of fire offices was reviewed in certain aspects. We shall speak of the results in some detail under FIRE PROTECTION.

This year was published the *First Rep. of the National Board of Fire Underwriters*, U.S., wherein numerous important points of practice are passed under review.

The Legislature of the State of Connecticut, U.S., enacted, that after the 30th Sept. this year, all pol. of fire ins. issued in the State should contain "*uniform conditions* as to the risks on which the ins. is based, said conditions to be approved by the Genl. Ins. Commissioner of the State, and no conditions except those so approved, not written in the body of the pol., should be valid." 2. No foreign ins. co. doing bus. in the State to issue pol. to citizens thereof, embodying *printed conditions*, not contained in the forms authorized by said Commissioner for pol. of cos. incorp. in the State. 3. Penalty for violation, double the amount of prem.

1868.—It may be stated, as a matter of historical record, that the Commissioners of Inland Revenue this year, by way of a dying effort, determined that the hypothecation of fire pol. to bankers and others in connexion with advances on produce, etc., was not lawful. New pol. in all such cases must be taken out. Nor could the practice of crediting the insured with any portion of the duty upon cancelled ins. be any longer permitted.

This year Mr. J. Griswold pub. in N.Y.: *Hand-book of Adjustment of Loss or Damage by Fire, for the Use of Fire Underwriters.* The author says in his introduction:

> . . . It may however be stated with strict accuracy that if the suggestions herein offered have no other merit, they may at least claim the distinction of being the only treatise upon the subject of fire adjustments exclusively to be found in this country; and in this absence of any similar source of information, it is to be hoped that it may prove of some practical utility. . . .

The author required to offer no apology for the appearance of this useful work. He gives us the following information regarding the classes of pol. in force in the U.S.:

> All F. pol., without regard to the subject written upon, may be classified as either—1. Specific; 2. General; 3. Floating; 4. Valued; or 5. Open. And these again may be—6. Concurrent; or 7. Non-concurrent in their terms. They may be further defined as follows: (1) *Specific:* Covering certain specific amounts upon certain specific subjects, in specified localities, for specified parties; (2) *General:* Covering under one amount, upon several subjects, or classes of art. combined, in one specified locality, for specified parties: this form is also called *Blanket*; (3) *Floating:* Covering in one amount, on one or more kinds or classes of articles, in two or more localities, or within certain specified limits, for specified parties: this is sometimes called a "Floater," and sometimes a "Compound" pol.; (4) *Valued:* Covering the insured subject in a specific value agreed upon and definitely settled to be paid in case of loss, and so inserted in the pol.: proof of value in case of loss is precluded in this form of pol., except in fraudulent over-valuations; (5) *Open Fire:* Covering by separate entries, made from time to time, on one or more kinds or classes of subjects, for such terms, amounts and rates, and in such localities as may be designated at the time of entry; each entry being, in fact, a new specific pol.; not valid until duly countersigned by the proper authority; (6) *Concurrent:* Covering the same subjects, in the same proportions, in the same or different amounts, in the same localities and for the same parties; either by the specific, general, floating, or other form of pol.; (7) *Non-Concurrent:* Covering subjects for the same owner, in the same location, without reference to the proportions, amounts or terms of other pol. upon the same subjects; either by the specific, general, or floating form of pol.; either singly or combined. This form is sometimes designated as "Mixed." *Adjusters not unfrequently find them very much mixed!*

He points out the necessity of understanding the meaning of these several forms of pol., in view of determining the obligations of the office under them respectively; and adds the following rules thereon:

> Adjustment under the *specific* form of pol. becomes a simple matter of the value of the property covered, and the amount of loss. Adjustment under the *general* or blanket, and the *floating* forms, when confined to single pol., are, like the specific, mere questions of value; but when combined with the specific form upon the same subjects, the adjustment becomes more or less complex and difficult, as the contribution may be more or less involved. Full explanations of this subject

are given under the head of *Apportionment of Loss or Contribution.* Under the *general* or *blanket* form of pol., the insurer is liable to be called upon to pay the full amount of the ins. upon a partial loss only of the property covered. This contingency can be obviated by the insertion of the *average clause* in the pol. The *Open Fire Pol.* being a series of specific entries, losses are easily adjusted under it. The *Valued Pol.* is one which not only intimates the value of the property covered by the ins., but also values the loss; it is equivalent to an assessment of damages in anticipation of loss; and is so specifically *specific* as almost to be said to adjust itself. The value being definitely fixed by the terms of the pol., cannot be questioned, except, as already intimated, in the case of fraudulent over-valuations of the subjects or interest insured; and to be valid as a defence, such over-valuation must be unquestionably apparent. The onus of proving the value is upon the insured, when made a question. *This form of pol. is seldom used in fire ins., but enters largely into the marine branch of underwriting.*

Other points arising out of "Adjustment," as also "Apportionment," of losses under these several classes of pol. have already been considered under FIRE INS. LOSSES, ADJUSTMENT OF; and FIRE INS. LOSSES, APPORTIONMENT OF.

It may be useful to state here, that in the U.S. the bus. of fire ins. has assumed phases which may be said to be entirely unknown in Europe. See FIRE INS., FINANCE OF; MIXED INS. COS., *Fire*; MUTUAL INS. ASSO., *Fire*; PREMIUM NOTES. See also this art under date 1855; and also U.S., sub-heading FIRE INS.

The 2nd ed. of the *Digest of Fire Ins. Decisions* [1st ed. 1862] was pub. in N.Y. this year, with notes by Stephen G. Clarke, Counsellor-at-Law. The author says: "My aim has been to make it as complete as possible to the present time; and to this end I have carefully examined every vol. of reports pub. in this country and Gt. Brit. since the former ed. appeared, and also a few vols. of prior date accidentally omitted from that ed. The present vol. contains an abstract of 1246 cases, embodied in 2216 sections, being an increase of 316 cases, and 691 sections over the former ed." "The growing importance of the interests protected by ins. against fire, and the necessity of a collection of the adjudged cases upon that branch of the law, is well illustrated by the increase of matter in the present ed." (See 1873.)

1870.—The Brit. Tariff Fire Offices this year introduced a "Uniform Pol.," and also new "Conditions of Ins." The principle was laid down: *that except in special cases the rate for a building is also applicable to its contents.* [FIRE INS., CLASSIFICATION OF RISKS IN.] [FIRE INS., CONDITIONS OF.] [FIRE INS. POL.]

The practice of *Individual Fire Underwriting* was again introduced into Gt. Brit. in a modified form by the *Mutual Fire* Ins. Asso., founded in Manchester this year. The individual members stand upon the risks accepted by the underwriters of the Asso. in certain agreed proportions. The details of working will be given in our hist. of that Asso.

Mr. W. H. Hore, then of the *Liverpool, Lond. & Globe*, pub. this year: *Remarks on the Apportionment of Fire Losses, illustrating by Numerous Examples the Practice of the Offices in Complicated Average and Non-Average Cases; and suggesting Means by which the Difficulties hitherto experienced in Apportioning Losses covered by Non-Concurrent Pol. may be avoided in the Future.* The author says in his preface:

> For many years I have been of opinion that an exhaustive treatise on the subject of fire loss apportionments was much needed; and I have reason to feel sure that the same opinion is very generally entertained by the members of the profession to which I belong. The subject is of great interest to all connected with the conduct of fire ins. bus., but it is, I fear, very little understood; and although this humble effort of mine falls far short of that which I think is needed, I hope that some good will result from it.
>
> My aim is to expose the defects of the rules now existing for the apportionment of losses, and to suggest and illustrate new rules, which, if adopted, would supply a want very greatly felt. Whether the opinions I have formed be, or be not, approved of by the associated offices, I shall feel that my labour has not been thrown away if the pub. of this work should excite general attention to the subject of which it treats.
>
> Difficulties are occasionally experienced in ascertaining what vaguely worded pol. actually insure. I do not propose to discuss such difficulties, but to confine my attention to those in which the principles of equitable contribution are involved.

It is impossible to follow the author into the technical subject he pursues; its contents are intended for those who devote their energies to the complicated subject of fire adjustments and apportionments. [APPORTIONMENT OF FIRE LOSSES.] [AVERAGE POL., *Fire*.] [FIRE INS. LOSSES, ADJUSTMENT OF.] [FIRE INS. LOSSES, APPORTIONMENT OF.]

A resolution was come to by the several offices most largely interested in farming stock ins., that the *Average Clause* should be embodied in all policies of this class in future. [AVERAGE POL., *Fire*.] [FARMING STOCK INS.]

Mr. C. C. Hine, Ed. of the *Monitor*, N.Y., pub. *Fire Ins.: A Book of Instruction for the Use of the Agents of the U.S.*; an excellent work, full of practical information on the many points which come before a fire ins. agent. It has passed through many ed., and still remains in general use. The following, which embodies points of practice, may be taken as a specimen of the style:

> *Losses.*—In cases of importance or intricacy, adjusters are usually sent to make the settlement, but small and plain cases may be adjusted through the agent by correspondence with head-quarters. When a loss occurs, notify the co. at once. If a case of importance, telegraph the number of the pol. and the prob. amount of the loss. Commit the co. to no particular line of action; but until advices are received, let your efforts be directed to *ascertain the facts*, and *protect the property*. I. *Origin of the fire.* Develop by every means all that can be ascertained in regard to the cause of the fire; whether it was the result of accident, carelessness or design; whether any unusual circumstances or appearances; any indications of spontaneous combustion; when first discovered and by whom;

> whether any threats had been made. II. *The character, standing, and circumstances of the assured;* whether involved, embarrassed, desperate; whether making or losing money; whether ever burned out before, and if so, whether then insured. III. *The property*; whether over-valued, unprofitable, unoccupied, in litigation, leased, of mixed ownership; whether any recent sale or offers to sell. If merchandize, whether a full or low stock. If any stealing at or after the fire—get particulars. IV. *The ins.;* whether any other; how much, and in what cos.; whether books and papers were saved. Under no circumstances whatever will you make any change or entry on a pol. after a fire. Let the whole matter of ins. rest precisely as the fire finds it. . . . .
>
> *Damaged goods* must be put in order at once, and the sound separated from them. This is the duty of the assured; but if he refuses to attend to it, and delay will increase the damage, have it attended to yourself; you are entitled to free access to the goods for that purpose, and the owner cannot debar you; but if delay will do no harm, defer action for advice, or the arrival of an adjuster. Damages on hardware, cutlery, stove, tin and iron stocks, from their liability to rust, should be made the subject of immediate appraisement. But dry goods, clothing, and similar stocks, should be first handled, spread, dried, and cleaned. Claimants frequently aim to make the most possible showing; while the cos. want only exact justice, they are entitled to counteract this action by developing the good points in the salvage, and must rely on their agents to protect their just rights, and defend them from extortion. *Never suffer wet goods to be piled up and neglected;* to heat, mildew and stain, when spreading and handling will do them good. If it becomes necessary to remove goods to another building, see that none are spirited away or subjected to further damage. In selecting appraisers, the assured chooses one and the co. the other. Aim to get upright and intelligent men who are posted in regard to the particular property needing attention; and let the appraisement proceed in detail upon each piece of damaged property, and never in a lumping, jumping manner. . . . .

Again:

> Never close a loss claim without special authority to do so after full investigation and correspondence. Agents are not authorized to pay out money nor draw drafts on the co. for that purpose. Feverish haste on the part of a claimant *to have a loss closed quickly usually means something*, and should have ample time to define itself. *Undue anxiety on the part of an agent indicates inexperience.* All fair losses will be promptly paid . . . Always remember that the *good* points in a loss case invariably *come out of themselves*, while the objectionable features have a natural tendency to shun observation, and therefore need to be searched for. If a case is *right*, scrutiny will do no harm; if it is not right, it needs it; therefore a proper investigation should always be insisted upon; not for the purpose of quibbling over the loss, but to arrive at exact facts and an open intelligible settlement.
>
> Blank forms for proofs of loss will be furnished by the cos.; but if a case excites your slightest suspicion, or is for any reason not entirely satisfactory, *do not give them out*. Every facility and assistance will be furnished to honest claimants; but cos. must not help to make fraud upon themselves plain or easy. The difficulty encountered by a rogue in getting up his proofs has often furnished the means for thwarting his fraudulent designs.

His excellent remarks on the moral hazard of fire underwriting will be quoted under MORAL HAZARD.

1871.—A fire occurred at the *King and Queen* Wharf, on the Thames, which led to a reconsideration of points in regard to the apportionment of fire losses under floating pol. See AVERAGE POL., *Fire*. [GOODS IN TRUST OR ON COMMISSION.]

Mr. Jos. M. Rogers, LL.B., pub. in N.Y.: *The Principles and Practice of Fire Underwriting systematically arranged.* This is another of that excellent class of practical treatises for which the U.S. has become so famous. The author says in his intro.:

> Since underwriting has been brought to a system, and experience has developed the fact that out of a given number of risks of a certain class so many will be lost each year, and from the impracticability of collecting assessments from each of a large number of assured persons after the occurrence of a loss, the almost universal practice is to collect the prems. or amounts which experience has demonstrated the assured would be required to pay during the time he has assured for, at the time the contract or pol. is issued. As it then remains for time to determine whether this sum will be sufficient to meet the losses and expenses, *it requires a thorough knowledge of the principles and practice of underwriting to be able to fix a rate which shall be approximately commensurate with the hazard.* As every *assured* is personally interested in the security and ability of the insurer to pay all losses which may occur, it is to the mutual interest of both insurer and assured that the rate charged be adequate to the hazard assumed in each case. [FIRE INS. PREMS.]

The author makes an excellent suggestion, viz. that the agent, before placing his co. upon a risk insured under other pol. in other cos., should see such other pol. and make his risk concurrent. This in regard to very large mercantile risks may not always be possible; but where possible it should most certainly be practised.

Mr. Henry Flanders pub. in Philadelphia: *A Treatise on the Law of Fire Ins.*, wherein the practice, as settled in regard to the points which have been before the Courts in the U.S., is fully stated. We have had occasion to notice this work already under various other heads.

The great fire of *Chicago* in Oct. this year opened up many important points for the consideration of fire adjusters, as also for fire underwriters.

1872.—The Address of Mr. John M. M'Candlish, read before the Actuarial So. of Edin. this year, on *Fire Ins*, contained reference to many important points of practice. We have spoken of it at length under FIRE INS., HIST. OF, and propose to quote from it further at the close of the present art.

An important decision regarding fire ins. occurred this year, in the case of *Martineau v. Kitching*, of which an account will be given under GOODS IN TRUST, INS. OF.

This year there was pub. in N.Y. by Mr. J. Griswold, "General Agent": *The Fire Underwriter's Text-Book*, which is literally a hand-book for every fire underwriter in any part of the world where the English language is spoken. Its aim is cosmopolitan; its usefulness inexhaustible. It could indeed have been rendered even more complete, by the use of dates, and more frequent reference to authorities; but these will prob. be supplied in later ed. We have made frequent reference to the work in these pages; and must continue to do so. It is not necessary therefore to dwell upon it to any considerable extent here. The author says in his intro.:

The book had its origin in the daily need experienced by the author—in common doubtless with all other fire underwriters—for some general work on the subject of fire ins., wherein might be found gathered in available form, its *theory and practice*, with appropriate laws, rules, and usages, deduced from the experience of the forefathers in the profession, which might serve as a beacon to guide the footsteps of the present generation ; but strange as it may seem – while life ins., a science of comparatively modern origin, abounds in literature, from the canvassing document of a single diminutive folio, to the royal octavo tome with hundreds of pages, devoted to the instruction of its votaries and the elucidation of its principles—fire underwriting, numbering the years of its existence by centuries, and ranking as a science, fails to embrace a single work of the comprehensive general character so urgently needed by the profession ; *so that what the practical underwriter of the present day knows of his bus. is wholly the result of his own obs. and of hard-earned experience, unassisted either by theory or the recorded experience of others, beyond a few elementary treatises and digests of the laws of fire ins., which, unaided by a knowledge of the underlying general principles of the subject, tend rather to mislead than enlighten.* The logical result is apparent in the great diversity of opinion and practice so prevalent, where all should be uniformity and certainty.

Mr. Charles R. Knowles, manager for the *Royal* of Liverpool, Albany, N.Y., secured a Committee of the State Board of Supervising and Adjusting Agents, "to consider and suggest some fixed, consistent and equitable rule by which settlements can be effected under non-concurrent or specific and open policies, which will meet with the approval of the courts of law and render the superior protection and advantage of specific policies so obvious as to insure the gradual and finally total discontinuance of the issue of general or blanket policies." We have not yet learned the result.

The great fire at *Boston*, U.S., in Nov. this year, again brought prominently forward numerous points of practice, especially as regards adjustments and apportionments. See MARKET PRICE.

The question of the liability of fire ins. cos. in respect of property destroyed in order to stop the progress of conflagrations also arose in a prominent manner in connexion with this fire. The subject has already been considered under DESTRUCTION OF BUILDINGS TO STOP FIRE ; also under FIRE EXTINGUISHMENT, EXPENSES OF. It will be further spoken of under FIRE PROTECTION, at this date.

1873.—The "Ins. Institute" was founded in *Manchester* this year, in view of discussing moot points, and otherwise improving the practice of fire ins. The published proceedings show that good progress is being made.

There was this year pub. in *Toronto: A Treatise on the Law of Ins.*, by S. R. Clarke, Barrister-at-Law. The main purpose of the work is in regard to fire ins. ; but it treats of life and marine also. It deals with all the fire cases which have been determined by the Courts in Canada, and it contains a chap. on "Adjustment, Re-building, etc.," contributed by Mr. Hugh Scott, of Toronto, which gives the practice on these points in the Province.

An excellent work was also pub. in Boston, U.S., by Mr. John Wilder May : *The Law of Ins. as Applied to Fire, Life, Accident, Guarantee and other Non-Maritime Risks.* It treats the law of the subject in a very masterly manner.

This year was published in N.Y. the 3rd ed. of *Digest of Fire Ins. Cases*, edited by Clement Bates, "of the Cincinnati Bar." This ed. is greatly enlarged and improved. It, like its predecessors, gives the dates of the decisions presented, without which no such work should be deemed complete.

The question of the undertaking of Fire Ins. by the Municipal or State authorities was again revived in the U.S. We have discussed it fully under FIRE INS., MUNICIPAL AND STATE.

1874.—Further attention was paid to the question of *height of buildings*, which is made one of the subjects of rating in the British Tariffs. It will be considered under HEIGHT OF BUILDINGS.

The National Board of Fire Underwriters, U.S., had before it the subject of co-insurance, and submitted to the associated cos. the following propositions thereon : 1. That, whenever pol. on manufacturing estab. contain an average or co-ins. clause, a deduction of 20 p.c. may be made from the standard rate. 2. That, when a manufacturer shall declare his willingness to insure not more than three-fourths of the actual cash value of his buildings and machinery and stock, and shall accept the form of pol. required, with insertion of the co-ins. clause, a reduction of 20 p.c. be made in rate. 3. That, when a manufacturer shall accept the form of pol. required, with insertion of co-ins. clause, a reduction of 10 p.c. shall be made in rate.

It also had before it some important questions of FIRE PREVENTION, which will be noticed under FIRE PROTECTION.

1875.—A very important question in practice came before the Brit. Courts this year, in the case of *The Australian Agricultural Co.* v. *Saunders* [Chairman of *Liverpool, Lond. & Globe*]. It was an action on a pol. of ins. from fire, and it raised a curious question as to whether, *when goods are insured from risk of fire and also from "perils of seas," and they are destroyed by fire in stores while waiting for re-shipment, the owner is to sue on the fire pol. or the marine pol.* ; or, in other words, whether the fire is to be regarded as occurring in the course of the voyage or on land. The case had arisen thus : The Australian Agricultural Co. are large shippers of wool, much of which comes from a district on the River Hunter, and is sent to Sydney for shipment to London or other places, and in Nov. 1869, the company effected a pol. of ins. in the *Liverpool, Lond. & Globe* from November, 1869, to May, 1870, in these terms :—"On wool, in fleeces or bales, in any shed, or store, or station, or in transit to Sydney by land only, or in any shed, or store, or on any wharf in Sydney until placed on board ship," with this provision, that the pol. was to be void if the wool was insured elsewhere without notice to the ins. co. In January, 1870, the Australian Co. effected another pol. of ins. in the *Indemnity Mut. Ins. Co.* in these terms :—"Lost, or not lost, at and from the River Hunter to Sydney, per ship or steamers, and thence per ship or steamers to London, including the risk of craft, from the time that the wools are first water-borne and of transhipment and landing and re-shipment at Sydney." Of this pol. there was no notice to the *Liverpool & London Co.* On the 9th of February, 1870—*i.e.* while both policies were running—a fire occurred at stores at Sydney, where a large quantity of the Australian Co.'s wool, which was stored there for shipment, was destroyed or damaged by fire, and 182 bales were burnt. The wool had been forwarded by different steamers down the River Hunter to Sydney, where the agents for the Australian Co. took possession of it, and placed it in stores for shipment to London, and then engaged ships to carry it to London. The practice of the port of Sydney is that when goods come there for shipment, they are not taken at once to the ships, but to stores of the stevedore, and so it was here. At the time of the fire, contracts of freightment had been entered into for carriage of the wool by certain ships to London, and receipts and bills of lading had been given in respect of the wool by mates and masters of ships, and the wool at the time of the fire was about to be re-shipped. Under these circumstances the question arose whether the water pol. or land pol. applied, and whether the action could be maintained against the *Liverpool & Lond. Ins. Co.* The Court of Common Pleas held in favour of the plaintiffs, the Australian Wool Co., that they were entitled to recover on the *Liverpool & Lond.* pol., because they thought that the marine pol. never applied at all, as it was a pol. only to cover water carriage, and there was no ins. for keeping the goods on land, and that it was to cover all risks in course of carriage by water, and in being loaded into or discharged from vessels, and in transhipment from one vessel to another, or in craft in the course of landing and re-shipment. The Co. appealed, but the decision was upheld.

Another important question arose this year also, in the case of *Manchester Fire* Ins. Co. v. *Wickes.* It was a motion for an injunction to restrain proceedings in an action at law commenced for the recovery of £5098 claimed under a fire pol. issued by the Co. to a firm of mill-owners at Leicester. The mills were destroyed in Feb. of this year, and the Co. refused to pay, on the ground of arson and fraud. The insured went into liquidation, and Wickes, having been appointed their trustee, sued the Co. for the amount claimed under the pol. The Co. filed a bill for discovery, alleging that the production of the books of the insured was the only means by which they could successfully defend the action. The present motion was to stay the law proceedings in the interim ; but V.C. Malins refused it, with costs.

Here the Co. stands to be defeated on merely technical grounds. In our judgment the Court should have made an immediate order for the production of the books to the Co. We hope the new procedure (1876) will remedy such a state of things. [INS. ASSO. IN THE LAW COURTS.]

The *Crown* and the *Hecla* Fire Ins. Cos., each founded this year in Lond , contained some new features, enlarging the scope of the risks ordinarily insured against under fire pol. These are stated under FIRE INS., HIST. OF. [FIRE INS., RISK INS. AGAINST.]

This year there was founded in Cincinnati the *Ins. Adjustment* Co.—a species ot general adjustment bureau, prepared to do adjusting work for all ins. cos., and backed by a subs. cap. of 50,000 dol. Mr. Byron D. West is President, and Mr. John I. Covington is Sec. ; and these are said to be men suited for directing the work in view.

By way of conclusion to this art., it may be well to notice the oft-repeated notion, that the bus. of fire ins. is possessed of less interest than that of life ins., or perhaps even marine, and some other branches of ins. That this is a fallacy we trust the series of art. we have here given upon the subject have helped to prove. We are, however, glad to call to our aid the following passages from the able Address of Mr. J. M. M'Candlish, delivered before the Actuarial So. of Edin. 1872 :

> But I have, perhaps, said enough to show you that the bus. of F. Ins. gives ample scope for the exercise of energies and capacities that are worthy of cultivation. *It possesses the interest, almost denied to life assu., of bringing you into immediate contact with the material world. There is scarcely any description of property capable of being injured by fire, or any mechanical process or chemical combination capable of generating fire, some acquaintance with which does not become necessary or desirable, first with a view to anticipating and measuring the risk of fire, and secondly in order to measure and adjust the damage caused by fire.* You visit some huge factory, and it is your bus., amidst the ceaseless and deafening noise of its machinery, to detect the direct or indirect causes of possible future conflagrations. You examine the structure of the building to note its power of resisting or feeding flames ; you inspect the boilers which generate the steam, and trace, perhaps, the flow of the hot vapour through the whole building ; you inquire into the system of lighting ; your attention is engaged by the numerous points in the machinery, where motion too rapid for the eye to follow is capable in a few moments of generating a high degree of heat ; you find that while this risk is guarded against by the constant application of oil, the oil itself is perhaps giving forth an inflammable vapour, and is thus a source of fresh danger. The material under manufacture is exposed in some part of the process to the direct action of a high artificial temperature ; or it is saturated with some substance which has a tendency to absorb oxygen, and so produce spontaneous combustion ; or its finer particles, set free and floating like a thick cloud over your head, are ready to flash into flame or to explode like

gunpowder. Questions suggest themselves as to the injurious effects of smoke or water on certain descriptions of property—even where fire may not actually reach them. You have to consider how far, if a fire breaks out in one quarter, it is likely to spread; whether "lifts" and "well-holes" and staircases and other means of communication will not carry fire from one floor to another; and whether the walls are thick enough, and the iron doors so constructed and so used, as to stop its progress laterally. You inquire into the character and circumstances of the owners of the factory, and into the respectability of the workpeople, and their disposition towards their employers. Being satisfied on these points, and having observed the various elements of risk, you apply to them the rules and rates of the appropriate tariff, taking care not to demand more of the insured than the degree of hazard calls for; *but not to accept less than your agreement with other offices requires you to charge.*

Or, to change the scene, you are invited to insure a cargo of cotton, or grain, or sugar, which has arrived at some great seaport by a given ship. You inquire where it is deposited, but the merchant does not know; it has been entrusted to a wharfinger or warehouseman, and may be lodged in all or any of a hundred different stores. How are you to measure and define your risk? How are you to exclude your liability as regards warehouses exposed to special hazards, and yet not interfere needlessly with your client's trade? How are you to avoid an excessive accumulation of risks under a single roof? How are you to insure a fair settlement in the event of a fire, with your client in the first place, and with other offices interested in the second?

Or, again, a letter, a telegram, or the public newspaper—none of them ever opened without anxiety—acquaints you with the occurrence of some great fire, by which property insured has been injured or destroyed. The orig. of the fire is perhaps surrounded by more than the common mystery; and your first duty may be to institute inquiries demanding more than common acuteness and tact. Then, in arranging what compensation is to be paid to the insured, numerous matters engage your attention, matters of accountantship, and book-keeping, perhaps even questions as to the character and circumstances of the claimant; customs of trade; the nature, the quantity, the quality, and the value of the property injured; the degree of injury, and the best method of dealing with what has been saved. Perhaps other offices are jointly concerned with you. One has insured only a portion of the property covered by your pol.; another has embraced under one head the whole of the property you have insured, and other property besides. Some offices have granted "average" pol., some specific pol.; some have insured the true owner of the property, some the person in possession of it, some the mortgagee. Questions have occasionally arisen out of such circumstances which have defied any but a Gordian solution; but in all cases they make some demand on the brain, and on the good sense and temper of those who have to deal with them.

Once more, these various duties and contingencies have not merely to be met when they arise, but to be provided for beforehand, as far as human foresight can anticipate them. It is often necessary to insure property which you cannot have examined by any skilled agent; and you must so adjust the forms of application and forms of pol. as to secure an accurate description and reasonable conditions. Your duty is not only to measure claims when they are put forward, and to defeat unrighteous demands, but so to conduct your bus. as to leave the smallest possible room for future doubts or cavils on either side. You have to interpret and obey the common regulations and tariffs, but you have also to bear a part in framing them; and you may be called on to contribute by your technical knowledge and experenice towards the promotion of wise municipal arrangements, or sound imperial legislation.

Finally, under "Causes and Characters of Fires":

The development of trade and manufactures is constantly introducing you to new subjects, most of them unfortunately connected with an increase in the number and extent of losses by fire. This growth of risk, and consequently of ins. rates, has been greatly promoted of late years by a variety of circumstances. The increased use of tobacco and the prodigious multiplication of lucifer matches are largely answerable. Many new substances also have been introduced into commerce, such as jute and Esparto grass, and mineral oils, which are either highly inflammable, or have a direct tendency to generate combustion. The speed of machinery is so much greater than it was that the risk of heating from friction and other causes is largely increased. Lastly, warehouses and factories are now built of such prodigious size, and there is so vast an accumulation of property under one roof, that when a fire does occur, the scale of loss is enormous—even when confined to the building where it had its orig.; while there is the risk of a conflagration fed by such ample materials bursting through all ordinary boundaries, and, as in the Tooley Street Fire in Lond., or the more recent burning of Chicago and Boston, involving an amount of loss beyond all previous calculations.

Several of the points here discussed or referred to we shall have occasion to consider in some detail under Fires, Causes of; while others have been already noticed under various heads.

Points in the practice of Fire Ins. arise under most of the titles which we have already enumerated under Fire Ins., Law of; and also under some others, as:

Agents.
Assessor of Fire Losses.
Average Pol., *Fire.*

Camphene.
Certificate of Loss.
Churches.
Churchwardens.
Classification of Risks.
Complex Ins. Asso.

Docks.
Doors.

Earthquakes.

Farming Stock Ins.
Fermentation.
Fire Inquests.
Fire Ins. Adjusters.

Fire Ins. for Years or for Life.
Fire Risk under Marine Pol.
Forfeiture.

General Average.

Illegality of Contract.
Increase of Risk.
Insanity.
Insolvency.
Interest on Claims.
Interest in Pol.

Judgment.

Lessor and Lessee.
Levy of Execution.
Lex Loci.

Lien of Creditors.
Liens.
Limitation Clause.

Mandamus.
Market Price.
Misdescription.
Mistake.
Mobs.
Mixed Ins. Cos., *Fire.*
Mutual Ins. Asso., *Fire.*

Origin of Fire.

Parol Contract.
,, Evidence.
Partners.
Payment of Loss.
,, of Prem.
Pledge of Pol.

Preliminary Proofs.
Presumption.
Proportion of Value Insured.
Pro Rata Clause.

Rating.
Recovery of Losses Paid.
Reform of Pol.
Re-insurance.
Removal, Notice of.
Renewal.

Rescission of Contract.
Responsibility.
Return of Prem.
Revival and Suspension of Pol.

Set-off.
Statement.
Statute of Limitations.
Stock Notes.
Storing or Keeping.

Taxation.
Title.
Two-thirds or Three-fourths Clause.

Usage.
Use and Occupation.

Vouchers.

Watchman.
Who may Sue.
Written Portion of Pol.

FIRE Ins. Premiums.—There seems to be no doubt, as we have elsewhere said, that to Gt. Britain belongs the credit of having first estab. Fire Ins. upon the mercantile principle of a fixed payment or prem. to secure a fixed indemnity in case of loss. It is true that the "contribution plan" attached itself to the bus. at a later date, as will be seen by reference to title Fire Ins., Hist. of. It is our present purpose to trace the changes in the prems. charged from the very inception of the bus. in Gt. Brit. on the principle stated; incidentally noting the changes in the classification of risks which frequently accompanied alterations in the prems. In theory at least, in modern times, the rates of prem. vary with the nature of the risk, as the rates in life ins. vary with the ages of the insured. In practice the principle is not quite so clear. The gradual steps taken in the matter of prems. will be traced with care; and the various efforts to place the rates upon a scientific rather than an arbitrary basis will also be reviewed.

1638.—In a scheme for fire ins., *i.e.* rebuilding of houses destroyed by fire "within the City and Suburbs of Lond., together with the City of Westminster and Borough of Southwark," it was proposed to charge "12 pence p.a. for every house yielding £20 yearly rent, if more or less, after the rate of 12 pence yearly for every £20." [Fire Ins., Hist. of.] For an explanation of this mode of estimating the prem. on the rent, see 1680.

1675.—In Mr. Deputy Newbold's scheme, submitted to the Lord Mayor, Aldermen, and Common Council of Lond. this year, he proposed to charge a prem. of £3 p.c. for ins. "new brick-houses" in the City in perpetuity; but in his amended scheme, submitted 1678-9, he increased the prem. to £5 p.c. He took the houses to be of the average value of £250, giving a prem. in one sum of £12 10*s.* per house. [Fire Ins., Hist. of, at these dates.]

1680.—The founders of the *Phœnix* No. 1, this year, charged 6*d.* per £1 of rent for brick-houses (double for *timber*). But each £1 of rent was calculated to represent £10 in value: so that a £10 rent, for which 5*s.* p.a. would be paid in prem., represented a brick-built house of the value of £100, which sum was to be paid if the house became destroyed by fire. This mode of estimating the prem. appears to indicate ***that the idea was based upon some municipal scheme of fire ins., wherein the assessment for losses was made in regard to the ann. value of the house occupied.*** A considerable deduction in the rate was made in the case of ins. for terms of years. The full T. is given under Fire Ins., Hist. of, at this date. (See 1700 and 1712.)

1681.—In the scheme of the *Corp. of Lond.* for Insuring Houses, which was perfected this year, the prem. was calculated upon each £100 insured. Thus, for insuring £100 for one year on a brick house, the prem. was 3*s.* 9*d.*; while to insure £100 on the same house in perpetuity, the prem. was £4. Double these rates for ***timber houses.*** The full T. of prems. has been given under Fire Ins., Hist. of, at this date.

No sooner was this scheme of the Corp. put forward, than the *Phœnix* (No. 1) people issued a revised tariff, reducing the rate to 5*d.* for each £1 of rent on brick buildings: that would be 4*s.* 2*d.* p.a. for £100, with a considerable "discount by way of purchase" on ins. made for longer terms. The full scale is given under Fire Ins., Hist. of.

1684.—There was estab. the *Friendly Fire*—the first of the series of "Mut. Contribution Sos." founded in this period. The scheme of this So. was to issue pol. for 7 years. The insured had to pay at starting "for undertaker's charges," *i.e.* charges of man., 1*s.* 4*d.* for each £100 insured on brick buildings; and beyond that deposit 6*s.* 8*d.* per £100; and undertake to pay a further contribution, not exceeding 30*s.* on each £100 insured, towards losses that should arise during his membership. *Double these charges for all timber buildings;* and all houses not having party-walls of brick or stone were deemed by the So. to be timber. An account was kept with each member, and at the end of his term of ins. the bal. of his deposit money—that is, the orig. sum, less any proper charges against it—was to be returned. Any member might retire from the So. after contributing his full quota of 30*s.* p. £100 insured. *The only ann. payment appears to have been the "undertaker's" charge, which curiously enough is designated the prem.* See Regulation No. III. in Fire Ins., Hist. of, under this date. (See 1706.)

1690.—A scheme for Fire Extinguishment—as distinguished from Fire Ins.—projected this year by Mr. Alex. Cutting, proposed an ann. contribution by way of assessment upon the ann. value (not exceeding two-thirds of true value) of all houses, on a graduated scale not exceeding 1*s.* for each £50 rated value. [Fire Ins., Hist. of.]

1696.—The *Hand-in-Hand* Office, founded this year—also a Mut. Contribution Office—charged for a 7 years' pol. for £100 on a brick building 2*s*. for prem. and 10*s*. for deposit—making 12*s*. for 7 years; but with the understanding that the 10*s*. was to be returned at the expiration of the period. Further details will be given in our hist. of this Asso. It was estimated that the int. upon the deposits would be sufficient to defray the ann. losses. (See 1731.)

1700.—The *Phœnix* (No. 1) Office this year issued a new T. of prems. To ins. £100 on a brick house for 1 year was 6*s*.; double for timber. Where the ins. was for a term of 3, 4, or 7 years, an abatement was made. It also announced a scheme of mutual contribution, "by the same insurers, upon the same security," at the rate of 5*s*. p. £100 on brick buildings; double for timber. The full T. of rates for each branch are given in our Hist. of F. Ins. at this date.

1704.—The *Lombard House* Fire Ins. project, set on foot this year, and which insured for the first time in Gt. Brit. "household goods" and "trading stock," was worked on the mut. contribution plan. Its charge for prem. on a 7 years' pol. on household goods, etc., was 10*s*. per £100, "the whole returnable with an interest [at 4 p.c.] at the end of the term, deducting only for losses." "Goods in timber houses pay double." To make up any deficiency in funds, the Asso. might assess contributions "as far as £1 p.c. for all goods insured" (Regulation 6). The full details of the scheme will be found under title FIRE INS., HIST. OF. The Asso. issued pol. from £25 upwards.

1705.—The *Phœnix* (No. 1) Office issued a new scheme of rates, in reference to the value of the property insured, instead of upon the rent as originally. The rates charged work out precisely the same as those of 1700. See PHŒNIX INS. CO. (No. 1).

1706.—The *Friendly* Fire issued new "proposals" this year, wherein its rates of prem. are then stated to be as follow, in add. to the pol. charge, which we assume remained as in 1684: for insuring £100 for 7 years, 11*s*. 8*d*.—being at the rate of 1*s*. 4*d*. p.a.; with 11*s*. 8*d*. p.c. "to be deposited at the office as a caution during the term any one insures for." This is a considerable advance upon the original charges: but on the other hand the contribution would be proportionally less.

1709.—The *Lombard House* Fire, sometimes, as here, calling itself the *Charitable Corp.*, advertised in the *Post-Boy* of 13th Sept. this year as follows:

> Household goods and trading stock, without any inspection, are insured against loss by fire at the rates following: for 7 years you may insure £25 for 2*s*. 6*d*, £50 for 5*s*., £100 for 10*s*., and after the same rate for any greater sum; returnable with an interest, deducting only for what shall be paid for losses by fire. By the *Charitable Corp.* for Relief of Industrious Poor, etc., in Duke Street, Westminster, who have 50 watermen with porters and carts in readiness to help remove your goods at fires. Attendance is given at the said office, and at the Lond. Coffee House behind the Royal Exchange, etc.

1710.—The *Sun* Fire, estab. this year as the *Co. of London Insurers* (based upon the *Exchange House* scheme of Povey), extended its bus. throughout Great Britain, and undertook the ins. of *household goods*, and *merchandize*, as well as houses. It adopted the system of *quarterly prems*. The first payment for a £100 pol. was 4*s*., viz. 1*s*. for stamp, and 3*s*. for prem. Afterwards the prem. was 3*s*. per qr. But of this again, 1*s*. was to be retained "towards raising a sufficient fund for making good all sufferers' loss and damage by fire." The prem. included a subs. to the "*British Mercury*" newspaper, without this the subs. was 6*d*. p. qr. less. *At the end of each* quarter the prems. received (less the deductions named) were to be divided among the claimants for the quarter *pro rata*. No pol. to be issued for more than £500. Houses and effects to be insured under separate pol. There is no reference to timber houses.

Here the scheme was one of mut. contribution, but on a different footing from any of the preceding. No assessment was to be made on the pol.-holders; but the claimants were to submit to an abatement of their claims if the proceeds of the quarter were insufficient to defray all the losses in full. [SUN FIRE.] (See 1720 and 1727.)

1712.—In the new Proposals of *Phœnix* Fire Office (No. 1), issued this year, the rate of prem. charged on brick buildings was 1*s*. p. £100 p.a., with deposit 5*s*. p. £100. On timber double. The ins. might be made for any term from 1 to 7 years. The Co. appears at this date to have been conducted on the "mut. contribution" plan only. The 1*s*. prem. was paid to the "undertakers," *i.e.* the proprietors of the office; for which they undertook all expenses of management, and also to indemnify the general body of contributors against such of the individual contributors as became "insolvent, or not to be found." [MANAGEMENT, EXPENSES OF.]

1714.—The *Union* Fire was founded this year on the mut. contribution plan. It issued pol. for 7 years (and other periods), charging for each £100 insured, "besides the stamp duties, pol. and mark," 2*s*. prem. and 10*s*. deposit, "which will be return'd at the expiration of the pol., together with a dividend of profits in the meantime made, *after deduction of losses and incident charges only*. And beyond this deposit, no one to be answerable for above 10*s*. p. £100 *in case of the utmost loss*." See Regulation No. 5 in Proposals given in FIRE INS., HIST. OF, where other details of interest will also be found. [UNION FIRE OFFICE.] (See 1720 and 1735.)

1717.—The *Westminster* Fire Office, founded this year, on the mut. contribution plan, insured £100 for 7 years on brick buildings on payment of 12*s*.; *double for timber*. "At the end of the insured term 10*s*. of the said 12*s*., and the like proportion for timber buildings, to be returned to the person that paid in the same, or to his assigns ; the other 2s. being applied to defray office rent, books, salaries, and other contingent charges necessary in carrying on the business of the So." All the insured were stated to be partners in the Asso., and were to parti. in yearly dividends. [WESTMINSTER FIRE OFFICE.] (See 1805.)

1718.—The audited Rep. of the *Westminster* So. for the first year of its operations showed the contribution for the year required on brick buildings to be 11d. p. £100 insured, and on timber 1s. 10d. This prob. was based a good deal on estimate.

1720.—On the 28th June, same year, the then rate of prem. in the *Union* Fire being as follows : For "Lond. and first limits" 2s. prem. and 10s. deposit p.c. on *brick ;* and 3s. prem. and 15s. deposit p.c. on timber. And extensions round Lond. and country 4s. and 6s. prem. respectively. It was resolved, "that for the greater equality amongst the members of the So. all unmovable and unportable goods and merchandizes, and all others in their nature and kind *very hazardous*, or which the directors shall adjudge so to be, shall for the future pay the rates following : *In Lond. and the first limits*, 3s. prem. and 15s. deposit p c. in brick haz. ; 4s. prem. and 20s. deposit p.c. in timber haz. Extensions and country, 6s. prem. and 15s. deposit p.c. in brick haz.; and 8s. prem. and 20s. deposit p.c. in timber hazardous. All glass, china, and earthenware to be ins. at these rates." Here we have a more elaborate classification than in any previous case : and there is the first mention of "hazardous" risks met with. (See 1735.)

The *Sun* Fire, in an adv. issued this year, announces its prems. as being "at the easy rate of 2s. 6d. per quarter with a book entitled *The Historic Register*, and 2s. a quarter without it ; not exceeding £500 for each pol. ; the subs. being liable to no further contribution." (See 1727.)

In the *Friendly* Fire of Edin., founded this year, the *ann. prem.* was £4 *Scots* for ins. £1000 on buildings for 25 years ; or in lieu of an ann. payment, 100 marks down for ins. of £1000 "in all times coming," *i.e.* perpetually.

1721.—The *London Assu. Corp.* got its Fire Ins. project on foot this year, and adopted a scheme of "classification of risks" altogether new to the bus. There were 3 classes—(1) *Common* Ins. ; (2) *Hazardous* Ins. ; (3) *Doubly Hazardous* Ins. For any sum not exceeding £1000 the rate in the 1st class was 2s. p.c. p.a.; above £1000 and not exceeding £3000, 2s. 6d. p.c. p.a.; above £3000 and not exceeding £4000, 3s. p.c. p.a.; above £4000 and not exceeding £5000, 4s. p.c. p a.; above £5000 and not exceeding £10,000, 5s. p.c. p.a. This was the limit of ins. in the 1st class. In the 2nd class, for any sum not exceeding £1000, 3s. p.c. p.a.; above £1000 and not exceeding £3000, 4s. p.c. p.a.; above £3000 and not exceeding £4000, 5s. p.c. p.a. That was the limit in the 2nd class. In the 3rd class, not exceeding £1000, 5s. p.c. p.a.; above £1000 but not exceeding £3000, 7s. 6d. p.c. p.a. That was the limit of ins. in 3rd class. We suspect these were far larger limits than any previously known. Any larger sums, or the ins. of any goods not included in these classes, could only be insured by special agreement. [FIRE INS., HIST. OF.] [LOND. ASSU. CORP.]

The feature of charging a higher prem. upon larger sums in the same class prevailed in all fire offices at this period.

1722.—The *Royal Exchange* Assu. Corp. got its scheme of Fire Ins. perfected this year. It would undertake fire risks not only throughout *England* and *Ireland* [not *Scotland*], but also in the Brit. Colonies and Dependencies. Its rate of prem. was 5s. p.a. for every sum not exceeding £250 on brick or stone buildings; and 8s. upon timber, plaister, or thatched buildings, and goods therein ; for any sum not exceeding £1500 on any one house and the goods, etc., therein. If the sum insured was greater, then 7s. 6d. and 12s. prem. p.c. p.a. respectively, on the whole sum ins. On *hazardous* ins., for £250 on brick buildings, or goods therein, 7s. 6d. p.a.; on timber, etc., 12s. p.a. up to £1500 ; above that limit, 11s. 3d. and 18s. p.a. for each £250 respectively. This was 4s. 6d. and 7s. p.c. p.a. The Co. is proprietary. Persons resident in the country were to pay for carriage of their pol. and marks. [FIRE INS., HIST. OF.] [ROYAL EXCHANGE INS. CORP.] (See 1780.)

1727.—The new Proposals of the *Sun* Fire issued this year adopted a classification similar to that of the *Lond. Assu.* in 1721. For common Ins., in sums from £300 up to £1000, the prem. was 2s. p.c. p.a.; from £1000 to £2000, 2s. 6d. p.c. p.a.; from £2000 to £3000, 3s. 6d. p.c. p.a. In *hazardous* ins. the rates for the same limits were respectively 3s., 4s. and 5s. ; for *doubly hazardous*, 5s. and 7s. 6d. ; the limit in this class being £2000. Other ins., for larger amounts, or being more hazardous risks, could only be insured by special agreement. The Co. since 9 June, 1726, had been put on a proprietary basis ; and one moiety out of every prem. paid was to be applied to raising a joint-stock of £48,000. [FIRE INS., HIST. OF.] [SUN FIRE.] (See 1794.)

1731.—The *Hand-in-Hand* this year issued amended Proposals, wherein the prem. was stated to be 4s. p.c. on brick buildings in Lond. and district (about a 10 mile circuit) for any sum from £1500 to £2000 insured within these limits. Ins. might be for any term not exceeding 7 years. Double on timber. The ins. not to exceed *three-fourths* of the value of the buildings. The contribution was not to exceed 10s. p.c. for brick risks, and double for timber. (See 1780.)

1735.—The *Union* Fire issued new proposals this year, wherein the prems. for ins. in London and 10 miles round were as follows: for every £100 insured on goods in brick or stone buildings, 2*s.* prem. and 10*s.* deposit; and on goods not so inclosed, 3*s.* prem. and 15*s.* deposit. For hazardous goods, included in brick and stone buildings, 4*s.* prem. and 20*s.* deposit; in timber, 6*s.* prem. and 30*s.* deposit; doubly hazardous, in brick or stone, 6*s.* prem. and 30*s.* deposit; in timber, 9*s.* prem. and 45*s.* deposit. Those who insured above £1000 and not exceeding £2000 to pay double the prem.; and from £2000 to £3000 still an increased proportion. [FIRE INS., HIST. OF.] All ins. beyond the Bills of Mort. to pay 3*s.* to surveyor for his charges.

1755.—Magens, in his *Essay on Ins.* pub. in *Hamburg* this year, says: Here the prem. on brick houses, or on goods lodged in brick houses, is but 2*s.* on each £100 to the value of £1000; and 2*s.* 6*d.* on each £100 to the value of £2000, and so on, except where hazardous trades are carried on, etc. [FIRE INS., HIST. OF.]

1763.—We have the means of knowing something of the rates of prem. charged in the U.S. at this date. The *Mutual Contributionship* Fire of Philadelphia had been founded in 1752, on the principle which its name implies. In the year 1852 the centennial meeting of the So. was held; and the President, Mr. Horace Binney, in his Address on that occasion, gave an account of the prems. charged at various periods in the hist. of the Asso. as follows:

> The rates of ins. in that early day (about 1763) varied considerably from the present. The Co. insured brick and stone houses in good positions for 20*s.* in the £100 (that is to say, upon a deposit of £1 p.c.), the party insured retaining a right to a return of that deposit on the expiration of the pol., if the general losses did not exceed the interest: and the Co. enjoying *on the prem. of ins.* only the use or int. of the deposit, to go into account against the losses and expenses for the proportional benefit of all the members. At the legal rate of int. in the colony, 6 p.c., this was equivalent to a deposit of 1*s.* 2½*d.* on the £100, or 6 cents on the 100 dol. In some instances they insured for as low a deposit as 17*s.* 6*d.* on the £100. They insured brick houses, with a joiner's or cabinet-maker's workshop in them, at 2 p.c. For good risks they very rarely exceeded 25*s.* and 30*s.*, that is to say 1¼ to 1½ p.c. deposit. Until the D. of Sett. was so altered, in 1769, as to prohibit ins. on wooden buildings, they insured even such buildings upon a deposit of 3 p.c. It strikes me more as remarkable because I find that in the first English Ins. Co., in 1696, when the rate of int. in Eng. was the same, namely 6 p.c., the lowest rate of prem. upon the least hazardous building was an ann. prem. of 2*s.* in the £100. How subsequent experience has modified this rate in Lond. I am unable to say; but I find one recorded instance of ins. of a house, perhaps of the second class, in 1739, on an ann. deposit of 3*s.* in the £100; and another on a first-class risk, in 1789, at 2*s.* The lowest prem. on a first-class building appears at that time to have been the rate I have just mentioned. The average of all the prems. of all the ins. in our own Co. in 1753, the end of the first year, was but 1·17 hundredths p.c.; and in 1763, at the end of 10 years from that time, but 1·44 hundredths p.c. *The average of the rates appears to have gradually risen up to the present time:* the best class at the present time being about 2 p.c. deposit, though some of the old risks still remain lower; and I may state the average of all our ins. as being 2·51 p.c. in 1822, 2·58 p.c. in 1832, 2·63 in 1842; and the same in 1852.

1776.—Dr. Adam Smith, in his great work, *The Wealth of Nations*, first pub. this year, offered the following obs. on fire ins. prems., embracing reference to marine ins. prems. also:

> That the chance of loss is frequently undervalued, and scarce ever valued more than it is worth, we may learn from the very moderate profit of insurers. In order to make ins. either from fire or sea risk, a trade at all, the common prem. must be sufficient to compensate the common losses, to pay the expense of management, and to afford such a profit as might have been drawn from an equal cap. employed in any common trade. The person who pays no more than this, evidently pays no more than the real value of the risk, or the lowest price at which he can reasonably expect to insure it. But though many people have made a little money by ins., very few have made a great fortune; and from this consideration alone, it seems evident enough that the ordinary bal. of profit and loss is not more advantageous in this, than in other common trades by which so many people make fortunes. Moderate, however, as the prem. of ins. commonly is, many people despise the risk too much to care to pay it. Taking the whole kingdom at an average, 19 houses in 20, or rather perhaps 99 in 100 are not insured from fire. [Ed. by M'Culloch, 1846, p. 49.]

Happily the proportions have very much changed since this great political economist wrote the preceding. The amount of destructible property still uninsured against fire is a problem difficult of solution. [FIRES AND FIRE INS., STATISTICS OF.]

1780.—The prems. charged by the *Royal Exchange* Office at this date were 2*s.* p. £100 on common ins., 3*s.* for hazardous, and 5*s.* for doubly hazardous, up to £1000; from £1000 to £2000, 2*s.* 6*d.*, 4*s.*, and 7*s.* 6*d.* respectively; from £2000 to £3000, 2*s.* 6*d.* and 5*s.*; the doubly hazardous risks were not taken for this amount.

The rates of prem. charged by the *Hand-in-Hand* at this date were fixed by sec. 19 of the Deed of Sett. as follows: The prem. is at the rate of 2*s.* p.c. and the deposit of 10*s.* p.c. on *brick houses*, and double those sums on *timber houses* within Lond. and Westminster, and 5 computed miles from the same, for a term not exceeding 7 years. Brick houses beyond 5 and so far as 20 computed miles from the said Cities were to pay 3*s.*, and timber houses 6*s.* p.c. prem.; while beyond 20 and so far as 30 computed miles from the said Cities, "*being the limits of ins. by this office,*" brick houses were to pay 4*s.* and timber houses 8*s.* p.c., the deposit being the same. Thatched houses, houses used for the refining of sugar, distil-houses, houses used for the baking of biscuits, glass-houses, turpentine-houses, and windmills were to pay 8*s.* p.c. prem. and 20*s.* deposit; brick buildings not above 100 yards from the Thames, from Iron-gate to Limehouse Dock on the north, and from Battles-bridge to Cuckolds-point on the south side, were to pay a prem. of 6*s.* and a deposit of 30*s.*; and timber 8*s.* and a deposit of 40*s.* p.c. Brick buildings not above 10 feet distant from those opposite to them are to pay a prem.

of 4*s.* and a deposit of 20*s.*; timber, a prem. of 6*s.* and a deposit of 30*s.* p.c. Houses with fronts and party-walls of brick or stone were to be accounted brick, and those which have not such fronts and party-walls to be accounted timber houses; and houses of brick and timber were to be determined by the directors on the report of the surveyor. Houses so soon as tiled in might be insured.

These rates were exclusive of the charges for the pol. and entry.

For all sums beyond £1500 an increased rate of prem. was charged.

1794.—At this date the prems. charged by the *Sun* Fire were the following: Common Ins. 2*s.* p.c., hazardous 3*s.*, doubly hazardous 5*s.* up to £1000; from £1000 to £2000, 2*s.* 6*d.*, 4*s.*, and 6*s.*; from £2000 to £3000, 2*s.* 6*d.*, 5*s.*, and 7*s.* 6*d.* The Guarantee Fund now stood at £100,000.

The practice of allowing an abatement in the prems. where the ins. was made for more years than 1 was general at this date.

1803.—The *Imperial* F., on commencing bus. this year, issued the following scale of prems. under date 21 Dec.: From £100 to £3000—Brick buildings and effects therein, not hazardous, 2*s.* Brick and timber buildings and effects therein, not hazardous, 3*s.* On thatched houses and effects therein, 5*s.* Farming Stock, taken generally on the premises, 2*s.* 6*d.* Shipping in any port, harbour, or dock, in Gt. Brit., 3*s.*—N.B. Larger sums will be insured by special agreement.

1804.—The estab. of the *Imperial* and *Globe* Offices in the preceding year began to have a sensible influence upon the rates of ins., especially upon such risks as the warehouses and merchandize at the London and West India Docks, the rates upon which previously were 5*s.* per £100. They were now first reduced to 4*s.*, and then, as it is said, in consequence of the superior management, to 3*s.* But other restrictions were also removed. It had been the general practice to charge an add. prem. if the sum insured exceeded £1000. No such additional charge was now made under £3000, and in many cases not at all.

1805.—In the "terms and conditions" pub. by the *Westminster* Fire at this date, the following rates are quoted: Class I. 2*s.* p.c. p.a. for any sum not exceeding £5000; Class II. 3*s.* p.c. p.a. for any sum not exceeding £3000; Class III. 5*s.* p.c. p.a. for any sum not exceeding £1000; Class IV. rates by special agreement. "Every septennial insurer becomes a member of the So. and shall be allowed one year's prem.; he will also be entitled to a proportionable share of profits, and liable to contribute to losses, but not to exceed 10*s.* p.c. on the 1st, 15*s.* on the 2nd, and 20*s.* on the 3rd class of ins." The Acts of Parl. authorize a similar allowance to be made where the duty is paid in advance.

1807.—The prosp. of the *Eagle* Co., founded this year, announced that a deduction of 10 p.c. from the ordinary prem. was made upon property insured in the country; but upon all buildings and goods within the waterside district of London an extra prem. of 6*d.* p.c. was charged for the add. risk.

1809.—The Proposals of the *Albion* F. and L. under date 25 March, this year, contained the classification of risks which we have given in detail under FIRE INS., CLASSIFICATION, etc. The rate for the 1st class (common), including farming stock generally, and without average clause, was 2*s.*; for 2nd class (hazardous), including numerous trades formerly in doubly hazardous, 3*s.*; and for the 3rd class (doubly hazardous), including many risks formerly classed "special," 5*s.*

1810.—There was pub.: *Fire Ins. Guide: An Imperial Guide to the best and cheapest Ins. against Fire; containing the Rates and Conditions of Ins. at the Fire Offices in Lond.; with an Alphabetical List of Hazardous Buildings, Trades, and Goods; and the Various Prems. required at the Different Offices.* A very well conceived pamph. rather inefficiently carried out. A copy is preserved in the Library of the Corp. of Lond.

1821.—The *Beacon* Fire commenced operations with an announcement of 25 p.c. reduction of prem. on private dwelling-houses and household furniture not deemed hazardous, "besides a reduction of 5 p.c. on the duty." It divided its risks into three classes: (1) private dwellings at 1*s* 6*d.* p.c.; furniture therein, 2*s.* 7*d.*; (2) shops or warehouses of the first class, 1*s.* 9*d.*; of the second, 2*s.* 9*d.* Thatched buildings without chimneys 2*s.* 6*d.*, with 4*s.* Farming stock 1*s.* 9*d.* It did not take the Co. very long to come to trouble.

1825.—The *Globe* Fire Office issued a circular dated 20 Sept. 1825, in which it announced the determination to make a reduction of prems. on the three ordinary classes of fire ins., not confining it to the country risks, and the villages and districts in the outskirts of the metropolis, or to private houses only in the best situations within it, but extending it generally throughout Lond. as well as the country, in Eng. and Scot. The 2*s.* rates were reduced to 1*s.* 6*d.*; the 3*s.* to 2*s.* 6*d.*; the 5*s.* to 4*s.* 6*d.* But farming stock, if insured without specification, was still to be charged 2*s.* p.c.

Various other town and country offices followed suit; and in fact there was a general reduction of rates all round—except in regard to a few special hazards, which were increased. The sixpences taken off appeared small as to the individual risks, but in the aggregate to the offices the consequences were considerable. (See 1832 and 1857.)

1826.—The *Atlas*, in its book of Agent's Instructions pub. at this date, gave its rates as follows: 1st class, 1*s.* 6*d.* p.c.; 2nd class, 2*s.* 6*d.* p.c.—limit £5000; 3rd (doubly hazardous), 4*s.* 6*d.*—limit £3000; 4th (farming stock), 1*s.* 6*d.* p.c.—limit £5000; 5th, risks to which none of the above rates would apply, insured by special agreement. "No charge made for pol. when the sum assured amounts to £300; nor for indorsements in any case." Shipping or craft in the West India Docks were included in the first class.

1830.—The combination of the managers of the Scotch Fire Offices, which had taken place last year [FIRE INS. OFFICE COMBINATIONS], led to practical results speedily. During this year a *tariff of minimum rates* was estab. in regard to some important classes of Scotch risks as follows:

	£	*s.*	*d.*
Apothecaries, prem. to insure £100	0	4	6
Bookbinders	0	5	0
Booksellers	0	2	0
Cart or wheelwrights, without stove	0	5	0
Cart or wheelwrights, with stove	0	10	6
Calenderers	0	3	0
Ditto, with steam-engine	0	4	6
Cotton-mills	0	14	0
Cotton-wool	0	2	6
Corn-mills, without kiln	0	7	6
Ditto, with kiln	0	10	6
Distilleries, with or without kiln, & all communicating therewith	0	10	6
Farming Stock:			
Farm dwelling-house, slated or tiled, and detached from offices	0	2	0
Farm dwelling, thatched	0	5	0
Slated or tiled offices	0	2	6
Ditto, thatched	0	5	0
Stock in barn yard for the year	0	2	6
Ditto, for shorter period	0	2	0
Ditto, with risk of steam-engine	0	4	6
Flax-mills:			
Warranted no carding of tow or heckling therein	0	16	0
With carding of tow	0	18	0
With the addition of heckling	1	0	0
Hecklers, without artificial light	0	5	0
Ditto, lighted from without	0	7	6
Ditto, lighted from within	0	10	6
Hotels and taverns	0	2	6
Jewellers' stock generally:			
(If divided) plate and plated goods and cutlery	0	2	0
Stock of jewelry	0	4	6
Mansion houses	0	2	0
Muslin goods in warehouse	0	2	0
Printers	0	5	0
Paper-mills:			
Heated by steam (no stove)	0	5	0
With stoves having flues	1	1	0
Public libraries	0	2	0
Pawnbrokers	0	5	0
Power-loom factories	0	5	0
Retail spirit-dealers	0	2	6
Soap manufacturers	0	3	0
Ditto, with steam engine	0	4	6
Sugar-refiners:			
Old refinery—building	1	11	6
Stock and utensils	2	2	0
Steam process only—building	0	16	0
Ditto—stock and utensils	1	1	0
Mixed process—building	1	5	0
Ditto—stock and utensils	1	11	6
Theatres, Edin. and Glasgow	1	11	6
Woollen-mills, without stove	0	7	6
Ditto, having 1 or 2 stoves	0	10	6
Ditto, having 3 or 4 stoves	0	12	6
Ditto, having 5 or more stoves	0	15	0
Wrights and house carpenters, or cabinet-makers, without stove	0	10	6
Ditto, with stove	0	15	0

Floating pol. 2*s.* 6*d.* p.c.

This was the first step in a most important direction. (See 1858.)

In consequence of the number of incendiary fires in connexion with *Farming Stock Ins.* about this date, attributed to the movement originated by the notorious "Capt. Swing," the rates for this class of risk in some districts were put up to 5*s.*, in others to 7*s.* 6*d.*, or even 10*s.* 6*d.* p.c. [FIRE INS., HIST. OF, 1833.]

1832.—In Mr. F. G. Smith's *Practical Remarks on the Present State of Fire Ins. Bus.*, etc., pub. this year, we are initiated into some of the reasons which had led to the competition in the rates of fire ins. during the present century, of which we have already had indications. Thus he says in his "Dedication," made to the "Directors and Managers of the Fire Ins. Cos. of Gt. Brit.":

> Gentlemen, you are all well acquainted with the ruinous system which has so long prevailed in this bus., and the remedy is with yourselves. *The object which led to the reduction of rates, and competition, having it is presumed been in a great degree attained by compelling numerous offices to relinquish the fire bus.*, it is but reasonable to look forward to some improvement, particularly when consequences are experienced which were never contemplated, and which are pointed out in these remarks. The great benefit to be derived from an unanimity between all the offices as to rates must be apparent; and I trust a calm consideration of *all the evils attendant on the present competing system* will lead to something being attempted for the improvement of the bus.

Again, in the "Preface":

> It is well known that the bus. for the last 7 years has been a bad one, and that very few, if any fire ins. cos., have made a profit during that period; but on the contrary have been losing. The mania of 1825 was fruitful in various schemes, ins. among the rest; and the *reduction of the sixpences caused a competition which has been productive of all the existing evils*, which have led to the present remarks.

In illustration he gave instances of "immense ins. effected on the stock and utensils of manufacturers, consisting of muslins, shawls, yarns, pattern blocks, and such like," in *Glasgow* and *Paisley*, done by the English offices at 1*s.* 6*d.* p.c., "and *in consequence thereof*, by most of the local cos."

1841.—Mr. Thomas H. Millar, in his *Practical Introduction to Life and Fire Ins., etc.*, pub. this year, gives a T. of fire risks with the rates of prem. demanded therefor," which, while useful at the time, has no claim for reproduction here.

1842.—The rates of prem. on mercantile risks in *Liverpool* were put up considerably, in consequence of some serious fires therein this and the preceding year. The increase was in some cases from 8*s.* to 36*s.* and the ins. offices insisted upon, (1) improvements in the structure of the warehouses, (2) a more systematic classification of goods, (3) a better supply of water. On these requirements being met, the rates were to be reduced. The subject is referred to in some detail in the evidence of Mr. Drummond before the Parl. Committee in 1862. (See that date.) [LIVERPOOL.]

1844.—The Commissioners for Inquiring into the State of Large Towns and Populous Districts, whose first Rep. was pub. in 1844, paid considerable attention to the subject of water supply, not only in regard to its bearing upon the health of the people, but also in relation to its applicability to the ready extinction of fires. The evidence they collected in this latter respect we have already reviewed under FIRE EXTINGUISHMENT. They naturally inquired whether the improved means for extinguishing fires would not lead to a reduction in the prems. for fire ins. The evidence given in regard to Gt. Brit. went to this extent, that as regards private houses, the prem. was already so small that no appreciable reduction could be made; but that with regard to manufacturing risks, warehouses, etc., these should feel the benefit of reduced ins. rates precisely in the ratio of the improved extinguishing appliances. Nottingham was taken as a town in point. [FIRE INS., HIST. OF, 1844.]

The Commissioners had extended their inquiries on to *New York* and *Philadelphia*, each of which cities had been placed under a constant supply of water at high pressure. Mr. W. G. Bull, C.E., of N.Y., furnished the information regarding that city; and Mr. W. Strickland, engineer to the Schuylkill Water Works, Philadelphia, in regard to it. The same questions were put in each case, and it will save space if we append the answers of both to each particular question.

Q. *Were the losses from fire in proportion to the number of houses much more frequent* [before the change of water supply]?

A. (*New York*)—The losses by fire since the intro. of the Croton [water] amount only to about half what they were the year previous. (*Philadelphia*)—At this period the losses from fire in proportion to the number of houses were much more frequent.

Q. *What effect has the alteration had on the practice of ins. in this city? What is it in this city as compared with other cities or towns where similar provision is not made?*

A. (*New York*)—The insurance against fire is effected 25 p.c. lower than before the introduction of the Croton water. (*Philadelphia*)—The present system of watering the city has reduced insurance risks in the proportion of 1 to 3 upon real estate, but not upon goods, wares, and merchandize; these are considered almost as a total loss from the damage by water.

The effect of inefficient fire extinguishment arrangements upon the rates of fire ins. prems. was shown in a very marked manner in the case of *Liverpool* about this date, as has been set fotth under FIRE EXTINGUISHMENT, 1845.

1847.—Mr. W. E. Hillman, in his *Illustrations of the Theory and Practice of Assu.*, pub. this year, included a T. of fire ins. prems. then charged for all ordinary risks. The use of such T. has almost entirely passed away. Rates are now determined by actual survey. [FIRE INS. SURVEYORS.] [FIRES AND FIRE INS., STATISTICS OF.]

1850.—Mr. Samuel Brown endeavoured to deduce the appropriate rate of prem. for each particular risk, by instituting a comparison between the number of casualties in each trade and the total number of persons carrying on such trade. But the results arrived at were not considered satisfactory. The results, indeed, were widely diverse from the rates which are apportioned to the risks under his consideration by the most experienced fire offices. The reasons for this may be briefly considered. Mr. Brown's method of deducing the rate absolutely was, without doubt, the most simple in theory possible, and was that which his intimacy with another branch of ins. would most readily suggest to him. But it laboured under three material disadvantages: 1. The great difficulty of ascertaining, even approximately, the number of persons carrying on each trade during the term of years under consideration. 2. The necessarily arbitrary assumption of the proportional value of a "considerable" and "slight" damage, as compared with a total loss. 3. The difficulty of classifying the immense variety of fire risks for the purpose of deducing rates of prem. The first is a point peculiarly affecting Mr. Brown's method; the second is a difficulty which cannot be overcome without the very great labour of estimating, in the case of every separate damage, its per-centage of the total value of the property at risk; the third, the difficulty is practically insuperable. *Vide* Mr. C. G. Fothergill's paper, to be noticed under date 1857. [FIRE INS., HIST. OF.] [FIRES AND F. INS., STATISTICS OF.]

The *Equitable* Fire, founded this year in Lond., said in its prosp.: "It will scarcely, however, be doubted by those who have paid attention to the statistics resulting from the past experience of the various offices, *that a lower scale of prems. than what are usually charged may in many cases be safely adopted.*" The Co. tried the experiment: it did not succeed. [FIRE INS., HIST. OF.]

This year also a Committee of the Managers of the F. Ins. Cos. engaged in the agency bus. in the U.S. at this date, 10 only in number, was formed in view of preparing a tariff for the purposes of the agencies. The Chairman of this Committee, Mr. Lewis Phillips, in justification of the new rates, offered the following statistics:

> The statistics of fire ins. in the U.S. will show that in a period of 20 years, commencing with 1811, and ending with 1830, it did not produce an average profit of 3 p.c. p.a. on the cap. employed.
>
> The bus. in the 20 years, commencing with 1831 and ending with 1850, exhibits a very discouraging result. The whole of the prems. received for the ins. of property in the U.S. and in the provinces of Brit. N. America during this period and many millions [dol.] of cap. were required to meet the losses. Many of the stock cos. and nearly all of the mut. cos. were ruined.
>
> The whole of the prems. received in Western N.Y., and in the North-Western and South-Western States, in *the last* 10 *years*, have not paid the losses by 25 p.c.

The same gentleman said in the same Report:

> All reasonable men are willing to pay prems. for the ins. of their property that will be sufficient to meet the losses and yield the cos. a fair compensation for the hazards to which their cap. is exposed. As for those that are not willing to sustain such cos., they will have no difficulty in getting their ins. with mut. or other cos. without cap., or they may estab. cos. of their own, that may run the race and come to the end that has usually terminated the career of cos. doing bus. for insufficient prems. Some of these, who only look at the surface of things, may say that our consultation together to avert impending ruin is a combination to estab. a monopoly. They do not perceive there cannot be a monopoly when there is no obstacle in the way of competition—that exorbitant prems. would defeat the object by raising up such competition. Rates of prem. that are sufficient to meet the aggregate amount of losses can only be ascertained by the experience of many years—not the experience of one co.—but the experience of all the cos. There is no other safe guide for the transaction of bus.

1851.—The Great Exhibition was held this year in London. The building and the contents were insured for very considerable sums at the tariff rate of 21*s.* per £100.

The effects of competition, resulting in great part from the number of new fire offices which had been founded during the preceding decennium, were beginning to be severely felt by some of the older offices. An attempt on the part of the latter to meet the competition by a reduction of rates on important classes of manufacturing and mercantile risks, some 15 or 20 p.c., led to a remarkable correspondence between Mr. Charles B. Ford, of the *Sun* Fire, and Mr. Herbert Spring, the then Sec. of the *Manchester* Fire. This correspondence will be found in the *Post Mag.* 22 Nov. 1851.

1855.—Mr. E. R. Humphreys, in his *Manual of Political Science*, pub. this year, said it had been calculated that on fire risks in Gt. Brit. the sum paid for any single pol., including the stamp [and per-centage] duty exacted by the Gov., was nearly 500 p.c. more than the value of the actual ins. On the supposition that the two-thousandth part of house property is on an average ann. destroyed by fire, the value of a pol. of £100 is *one shilling* ann., whereas the actual sum paid was on an average of all risks 4*s.* 6*d.* ann., of which 3*s.* went in payment of duty, and 6*d.* might be supposed to be added for compensating the management.

1856.—Mr. Thomas Miller read before the Inst. of Act. a paper [*Assu. Mag.* vol. vi. p. 333], designed to show why fire statistics on the question of losses and prems. were not to be depended upon. His argument was that the prems. received, and the losses sustained, on any particular class of risks, were affected by the accidental circumstance, in each individual case, of a larger or smaller sum being insured; and the experience thus obtained was biased in consequence. To obtain the real experience, the sum insured in each risk should be reduced to a uniform standard of £100, and each loss should be calculated at its amount per £100, while the prems. received should simply be the rates p. £100 at which the ins. was accepted. In ordinary insurances not subject to average, he says, two laws come into operation: one of these relates to the sums insured, compared with the values of the properties at risk: the other to the amounts of loss compared with such values. The former is dependent upon individual will, the latter upon physical causes. When elements of hazard advance in the same ratio, the risks of buildings are proportionate to their respective sizes; and on the supposition that it could be possible to add one risk to another indefinitely, and without separation, it is shown that total destruction of the whole agglomeration may with certainty be prognosticated, within a limited time. He therefore lays it down as a vital principle that separation and limitation of risks are indispensable to safety; and these considerations greatly affect the question of prems. His arguments will be noticed in more detail under FIRES AND FIRE INS., STATISTICS OF.

1857.—Mr. C. G. Fothergill read a paper before the Inst. of Act.: *On the Causes of Fires in London during the* 24 *Years* 1833 *to* 1856 *inclusive; with some Remarks on the Deduction of Correct Rates of Prem. for Fire Ins.* The paper is pub. in vol. vii. of *Assu. Mag.* p. 91. The first portion of the paper will fall to be noticed under FIRES, CAUSES OF; and FIRES AND FIRE INS., STATISTICS OF. The latter portion may be quoted here:

> Before the present century, the rates charged for fire ins. were much nearer in system than at present to those in use for life offices. All risks were lumped into a very few rough divisions, in consequence of which the lowest risks paid then more, and the most hazardous risks far less than now. Indeed, a century since there were but *two* rates of prem. in use, and those dependent only on the construction of the premises, viz. 2*s.* p.c. for brick, and 4*s.* for brick and timber buildings and their contents; so that, in the bus. of one long estab. office at least, and prob. in others, such extreme instances may be found as the ins. of very large sums on Drury Lane Theatre at 2*s.* p.c., being brick built, and on the Pantheon Theatre (now occupied as a bazaar) at 4*s.* p.c., on account of its being partly timber built; whereas the current rate for such risks, and which experience has shown to be justified, vary from 2½ to 4 guineas p.c. And the only deviations for a very long period, from these two rates of 2*s.* and 4*s.*, occurred in cases in which an office insured a considerable amount on any one risk, when a higher rate was frequently demanded on such account merely.

But for many years past the fire offices have been continually graduating their rates among the different risks, according to all the various circumstances which their experience has shown to influence the hazard of each. The steady carrying out of this plan in the practice of fire ins., and the add. of extra charges for such of the processes or peculiarities of any trade as their statistics have proved to be fraught with danger, have enabled the offices from time to time to modify their prems.; and in the year 1825 particularly to reduce the rates on the least hazardous ins. as much as 25 p.c.: at the same time that the prems. on certain businesses, inadequately rated up to that time—among others, candle-makers, tallow-melters, cabinet-makers, and carpenters, coach-makers, coopers, printers, etc.—were considerably increased.

Thus it would appear that, having due consideration to the great difficulties of systematically deducing fire prems. from the general statistics of fires, the offices, *instead of resisting on that ground all reform in their charges, have based their prems. on their own experience, and have succeeded in effecting important reductions from the orig. rates for normal insurances;* while their prems. on special and extremely hazardous property are proved correct by the agreement of competing cos., and the speedy dissolution of nearly all those offices which have from time to time been started to undersell them in any material degree.

The following is the scale of prems. charged by a young fire office in the U.S. at this date. It has since become a powerful co.:

	Cash rates for each 100 dols., Insured for		
FARMERS' DEPARTMENT.	1 YEAR.	2 YRS.	3 YRS.
Dwelling-houses, wash and spring houses of stone or brick	·35	·50	·62½
Same kind of building of wood	·40	·60	·75
All barns and out-buildings	·40	·60	·75
Churches, school-houses and shoemaker, weaver and tailor shops of brick	·40	·60	·75
Same kind of building of wood	·45	·70	·90
Stores, warehouses, and taverns of brick	·45	·70	·90
Same of wood	·55	·80	1·00
Tanneries, bark and shingle mills, propelled by water	·62½	1·00	1·25
Barns at taverns, and grist and saw mills	·55	·80	1·00
Woollen factories propelled by water power	·75	1·20	1·50
Blacksmith shops, carpenter shops, etc., stone	1·12½	1·75	2·25
Same of wood	1·30	2·00	2·62½
Lumber in yards, and still houses unexposed	1·30	2·00	2·62½
MECHANICS' DEPARTMENT.			
Dwelling-houses of brick, slate or metal roof	·45	·75	·90
,, ,, shingle roof	·55	·80	1·00
Dwelling-houses, wood	·62½	1·00	1·25
Stores, warehouses and taverns, and shoemaker and saddle shops, brick	·62½	1·00	1·25
Same of wood	·75	1·20	1·50
Churches, academies, etc., brick	·55	·80	1·00
Same of wood	·62½	1·00	1·25
Barns, tin and sheet iron shops, brick	·75	1·20	1·50
Same of wood	1·00	1·40	1·75
Barns at taverns, brick	1·00	1·40	1·75
Same of wood	1·12½	1·75	2·25
Tanneries without steam	1·12½	1·75	2·25
Bookbinderies and printing offices of brick	1·12½	1·75	2·25
Same of wood	1·30	2·00	2·62½
Paper mills propelled by water power	1·30	2·00	2·62½
Clothing, jewelry and stationery stores, brick	·75	1·20	1·50
Same of wood	1·00	1·40	1·75
Woollen factories of brick	1·12½	1·75	2·25
Same of wood	1·30	2·00	2·62½
FOR ONE YEAR ONLY.	Rate for 1 Year.		
Livery stables of brick	1·50	.....	.....
Same of wood	1·87½	.....	.....
Foundries, brick	1·87½	.....	.....
Same of wood	2·62½	.....	.....
Blacksmith shops, carpenter shops, etc., of brick	2·25	.....	.....
Same of wood	2·62½	.....	.....
Saw, paper and planing mills, propelled by steam, brick	2·25	.....	.....
Same of wood	3·00	.....	.....
Machine shops propelled by steam, brick	2·25	.....	.....
Same of wood	3·00	.....	.....
Distilleries propelled by steam, brick	2·25	.....	.....
Same of wood	2·62½	.....	.....
Lumber in yard unexposed	1·50	.....	.....
Lumber in yard slightly exposed	2·25	.....	.....

The Ed. of the *Baltimore Underwriter* says hereon: "The peculiarities of this classification are striking from their singularity. What would underwriters of the present day think of classifying barns at taverns with grist and saw mills, and write them at 55 cents for 1 year, 80 cents for 2 years, and 1 dollar for 3 years?" Adding:

> The rates given, while adequate in 1857, would of course be wholly inadequate for the present time, and are only pub. to show that previous to the introduction of so much inflammable material in warehouses, manufactories, etc., as well as the present height of buildings, and their fragile construction, that the bus. of fire ins. was profitable, even at these extremely low rates. Another prominent cause of the advance in rates since 1857 is the fearful increase in the Moral Hazard, to meet which it is impossible to fix a rate.

Again:

> That there has been since 1857 an entire change in classification, and a gradual advance in rates, is an acknowledged fact, and that fire ins. cos. with present classification and rates are not accumulating wealth is shown by the meagre dividends paid. With an improved classification, and largely advanced rates, has come a corresponding increase in losses, by no means agreeable or re-assuring.

1858.—The leading Brit. offices, after having had for some years a general understanding regarding rates of prem. on various classes of special risks, combined this year into what is now known as the Tariff Asso. The proceedings of the Asso. have been of immense service to the cause of fire underwriting. [FIRE INS. OFFICE COMBINATIONS.] The revised tariff on Lond. mercantile risks then made will be reviewed under date 1861.

1861.—This year constitutes an important landmark in regard to rates of prem. On the 22 June the great fire at Cotton's Wharf, Tooley Street, London Bridge, commenced, and lasted for some days. The loss to many of the Brit. offices was immense. They stood their ground, and paid. But the circumstances, as well as the magnitude, of the fire caused alarm, amounting to panic. The great elements of danger were seen to lie in the enormous size of the buildings and the miscellaneous character of the goods stored. It was sought to enforce regulations (1) for dividing the space by properly constructed party-walls; (2) for the classification of goods stored—so that the hazardous should not be in the same building with the non-hazardous. Pending the adoption of such regulations, large add. were to be made to the prems. The nature of these add. will be shown presently.

The merchants, who stood to be seriously affected by the change, pointed out that the construction of the warehouses of the wharfingers was entirely beyond their control; as indeed was the storage of goods. In the mean time they must be insured. Their remedy they considered to lie in the promotion of new fire offices. What they did, as also what they did not do in this direction, has already been stated under FIRE INS., HIST. OF.

The fire offices put up their rates, first on the "panic principle"; but within a month cooled down more into the line of reason. The following will serve as a specimen of the changes made—the first col. showing what had been the charges from the formation of the Tariff Asso. in 1858, down to the time of the fire:

	1858, as revised.		1861, 6 July.		1861, 1 Aug.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
Floating policies including carriers	12	6	35	0	25	0
,, excluding carriers	10	0				
The four docks	3	6	14	0	10	0
Upton warehouses	2	6	7	6	6	0
Victoria Dock Company warehouses, Steel Yard	3	6	not fixed.		35	0
,, Goodman's Yard	4	6	7	6	7	0
Commercial and Surrey Canal Docks	5	0	12	6	7	0
,, Brick-built warehouses only	3	6	12	6	4	6
,, Timber in open yard	3	6	12	6	7	0
First-class wharf risks	4	6	15	0	12	6
Second ,, ,,	7	0	21	0	16	0
Third ,, ,,	10	6	28	0	21	0

The rates refer to merchandize. In regard to certain goods not coming within the above range there were equal, or still larger additions. For instance, hops were increased from 2*s.* 6*d.* to 8*s.* p.c.; timber from 3*s.* 6*d.* to 12*s.*, and so on.

The two new offices founded started upon the non-tariff principle; but one became absorbed into a tariff office, and the other soon afterwards joined the associated offices. The rates on the whole, for a time at least, maintained a substantial increase.

1862.—On the meeting of Parl. this year, the consideration of the incidents attending the fire of last year came up in the form of a motion for the appointment of a Select Committee of the House, "to inquire into the existing state of legis., and of any existing arrangements for the protection of life and property against fire in the Metropolis." The results of this Committee have been reviewed under FIRE BRIGADES; FIRE EXTINGUISHMENT, etc.; and will be spoken of more at large under FIRE PROTECTION. We propose here only to notice the evidence that was taken on the subject of *Fire Ins. Prems.*

Mr. W. M. Browne, Sec. of *Westminster* Fire, and Hon. Sec. of Lond. Fire Engine Estab.—282. How are the ins. cos. concerned in the question of the protection of property against fire?—By the amount which they have at risk under their ins. pol. 283. Are not the ins. cos. paid solely for the bus. which they do by the prems.?—Certainly. 284. Do not those prems. generally vary according to the ascertained statistics of losses incurred by fire?—By approximation they do, *but our statistics are very imperfect upon those heads, and the application of ins. prems. varies immensely, according to the opinions of the managers who have to decide upon the rates to be charged.* . . . 296. When you allude to 2*d*. as being the per-centage of the expenses of the Fire Brigade, what is *the total average prem.* paid?—That is rather a difficult question, but I imagine that it is somewhere about 3*s*. p.c., taking the average. 297. The lowest prem. being what?—One shilling and sixpence; in the office with which I am connected the average prem. does not amount to 2*s*. 6*d*. p.c. . . . 382. If the Fire Brigade were entirely done away with, do you think that losses by fire would be increased in Lond.?—I am satisfied they would to a very large extent. 383. Do you not think that under those circumstances the ins. offices would increase their prems. of ins.?—They would be under the necessity of doing so. 384. If the prems. would, according to your opinion, inevitably be increased by the Fire Brigade being done away with, would it not follow that the prems. of ins. would diminish if the expenses of this Brigade were done away with?—The only question is whether the expenses of this Brigade are sufficient to make an amount which would make a practical reduction in the prem. If it is only 2*d*. p.c., it is not very likely that people would care whether they paid 1*s*. 6*d*. or 1*s*. 4*d*. for the ins. of £100. 385. If the expenses of the Brigade were doubled, do you think that then it would not affect the question of the prem.?—I think it would. 386. Is it then a mere question of degree?—Quite so. . . . 465. You insure property all over the country?—Yes. 466. I suppose there is no difference in the prems., according to whether the towns are well supplied or otherwise with fire brigades?—No, that is not an element which we take into consideration.

[If Mr. Browne had held office in a co. ins. large mercantile risks, we may be quite sure he would have answered this question differently. The nature of the bus. of his office may be gathered from his answer to question No. 297. It is of the best class, viz. private dwellings, etc.]

Mr. T. Piper, Builder and Surveyor.—1568. I presume that you are desirous in all cases to fix your prems. at what you consider will be a profitable rate?—Certainly. 1569. And if from any cause, whether the abandonment of the Fire Brigade or otherwise, risks appear to be on the increase, you would necessarily charge a greater amount of prem.?—Certainly. 1570. So that the ins. offices are to be repaid by the prems., which are fixed according to the risk?—Certainly. 1571. And if fires were to increase tenfold, the ins. offices would *pro tanto* increase their prems.?—They must do so.

Mr. John Drummond, Man. Director of *Sun* Fire, and Chairman of Lond. Fire Engine Est.—1643. Do you think that an ins. office has any direct interest in preventing fires, unless the property has been insured at that office?—No, except so far, that although this house may not be insured in the office, the next may; it is always the interest of the office to put out the fire. 1644. If the Fire Brigade in London were abolished, do you think there would be any risk of an increase of fires in Lond.?—Very great. 1645. Supposing that the offices were to find that there was a very large increase of fires, would they not increase the prems.?—That must be a very necessary consequence of the increase of fires. 1646. Do you not think that they would have the power of protecting themselves equally by an increase of prems. if there was an increase of fires?—Yes, if we could carry that increase of prems., but the competition is so great that it is a very questionable matter whether the slightest increase can be carried into effect. 1647. What description of property in Lond. is considered to be the most profitable for ins. at existing prems.?—Private house property. 1648. Then other property, such as property in warehouses, is exposed to greater risk?—Far greater risk. 1649. And it pays a higher prem.?—A much higher prem. 1650. That prem. is therefore regulated entirely by what you believe to be the ascertained amount of risk, as far as you can ascertain it?—No; that is one element, but a much more powerful element is the competition. 1651. But the competition, I suppose, does not interfere with the bus. being conducted on sound principles as to profit; does it?—I can only say that for ourselves we have done mercantile bus. for the last 15 years at a loss; so long as it was a trifling loss (and I believe I may say so of nearly every ins. office), and the account was not very badly on the wrong side, we submitted to it; when it came to a large loss, like that at Tooley St., we were obliged to look it in the face and to increase the prem. 1652. What is the inducement to an ins. office to carry on bus. at a loss?—There are certain branches which pay, and certain branches which do not, *and we have been obliged in consequence of competition very often to carry on a bus. at a loss for 4 or 5 years, until those who have competed have found that it was a losing trade for them too, have come in, and the thing has gone back to a more remunerative scale of prem.* I can instance the cotton mill bus.: 8 or 9 years ago some of the local offices came largely into it, and reduced the prems. nearly one-half; it went on for 4 or 5 years, the bus. being done at a positive loss upon that branch, and at the end of that time these local offices also found that they were doing a very bad bus., and they said, "If you will agree, we will go back to what the amount was before we lowered the prems.," which we did, and the bus. has been in a wholesome state since then; that was about 5 years ago. 1653. Are the Committee to understand that from your experience you consider that the ins. of what are called mercantile risks in Lond. is effected at a loss to the offices?—It has been so for some years, up to the present time. 1654. During the last 15 years?—During the last 15 years. 1655. The whole of the bus. insured in the Metropolis, I suppose, is profitable?—The local bus. of Lond. I should think generally is not a largely profitable one. 1656. But the whole is conducted with some profit, I suppose?—Yes; there must be profit, or we should leave off London bus.; but it is not a largely profitable business. 1657. But to a certain extent the ins. on private property pay for losses incurred on mercantile property?—To a certain degree that may be the case. 1658. Do you think that that is a fair principle?—The man who makes his living by his shop must charge a regular price all the way through in order to protect himself from loss. 1659. Is it not a fact that the insurers of private property pay somewhat larger than they would be required to do, if the ins. offices did not charge so low a prem. on mercantile property?—No, there is a great deal of other property besides private property which is profitable. When I say mercantile property, I allude to the large wharfingers, and the docks, and the produce which goes there; the tradesmen's premises, shops, and such places are, some of them, profitable, and some not. . . . . . 1664. But do you not know instances in a very large way of bus. indeed, having immense transactions who never insure at all, but who consider themselves their own insurers, and who consider that if they were to insure everything that they have, the expense would be enormous; and that it is much better for them to run the risk of some portion of their property being destroyed than to insure it at all?—That may be so, but I am not aware of any such instances. 1665. If the amount of property insured is very greatly under the amount of insurable property, is it not clear that either the insurers or the ins. offices pay to a certain extent for the protection of that property which is not insured?—Yes, no doubt so far as the expenses of the Brigade go. 1666. You have stated that if the Brigade was done away with, there would be, in your opinion, a large increase of fires in Lond., and consequently a very considerable increase of prems.?—Unless some efficient force succeeded it. 1667. If that was the case, the consequence of the greater number of fires would surely be an increase of prems.?—No. 1668. Would it not follow that if there was found to be a considerable increase of fires, the ins. offices would be obliged to increase their prems.?—Perhaps they might; but it would bring so many fresh offices into the trade that they would be obliged to reduce them again. 1669. I think you have said that, on the whole of the ins. effected in London at present, the profit is very small?—I have never gone minutely into the details; I have gone into different branches of them, but I have never summed them up together; but I should not think that it was a large item. . . . 1672. Was it not the case in *Liverpool*, that in consequence of a great increase of fires in the cotton warehouses, an increase of prems. took place some years ago?—There were some very large fires which took place in Liverpool in 1843, and prior to that; this aroused the Liverpool people from their slumbers, and they applied themselves to providing a better supply of water, and to amending their buildings, and, in short, to putting the whole town on a different footing. *The prems. at Liverpool were very largely increased: I think they were four times as much as they are now.* This boon was held out to them: that if they increased their water supply, and if they put a classification upon their goods, and if they amended their buildings, certain reductions would be made. *Those reductions were made in the course of two or three years, and the Liverpool rates gradually diminished to what they had been before, and at which they have stood ever since.* 1673. But during the time that there was an increase of risk, there was an increase of prem.?—A very large increase of prem., *with a view of forcing them to make those arrangements.* 1674. Was it considered by the offices that those increased prems. were adequate to meet the increased risk?—It was hardly that, the fires were so very numerous. 1675. But it was at all events intended to provide greater funds by prems. against risks of fire?—That was one of the effects, but the object of the thing was to force them into better construction, and into a better arrangement of water, all which things have been accomplished.

1676. Would it not naturally follow, taking the practice of Liverpool, that if by increasing the prems. you drove the insurers [the insured] into improving their buildings, and thereby diminishing their risks, and providing also increased facilities for putting out fires, the same thing would occur in Lond. if there was an increase of risk in Lond.; would not the insurers be then driven either to provide by some public arrangement for the greater protection of Lond., or to improve their buildings so as to diminish their risk?—*We have pursued that course since Tooley Street Fire. We have put out a scale of charges with reductions consequent upon structural improvement, and consequent upon classification of goods.* When these improvements are certified to have taken place by the surveyor whom we employ, a large diminution of prem. will take place. 1677. But until that improvement takes place you increase your prem.?—Until that we have increased our prems. . . . 1679. But if an increase of risk causes an increase of prem., does it not follow as a natural consequence that a diminution of risk would have a tendency to cause a diminution of prem.?—It would do so, but we have never seen that diminution of risk. 1680. Have you not just informed the Committee that as soon as these improvements take place in the warehouses in Lond., you will diminish the prem.?—We put the prem.

expressly high in order that we might be able to afford to do the bus., and in order to drive them into the improvements which we felt necessary to be made. 1681. But when those risks have diminished, your prems. will diminish?—Yes, but not to what they were before. 1682. *The prems. have therefore a natural tendency to rise, or to fall, according to the increased amount of risk?*—No; they never have done that. On this occasion we set to work (it is only 6 months ago), and we calculated what was the prem. which would give us a fair remuneration. Besides that, we said, Our object is not so much excess of prem. as it is a further degree of safety; *and we then put a further scale upon those charges, and we said, Such and such reduction shall be made when you have done so and so; and we are already carrying that largely into effect.* . . . 1693. Does it not appear to you that the only interest in the long run which an office has in the question is accurate statistical information, so that they may be able to regulate their prems. according to what they believe to be the ascertained risks?—*If we could do that, we have ourselves accurate statistical information for the last* 150 *years, and we could tell pretty clearly, if we looked into it, what it is; but we find the competition so great that we cannot obtain a fair prem.* 1694. You cannot charge as much as you would like?—We cannot charge as much as we should like, *or as much as the risk demands.* 1695. If by any improvement in the present Fire Brigade, or fire arrangements of Lond., it was found on an average of years that the amount of fires was considerably diminished, would not the competition of the offices very shortly bring about a diminution of prems.?—I can hardly conceive the thing taking place, but there is no doubt that it would. If fires were to cease, the bus. of an ins. office would cease altogether with them. 1696. *But beyond a certain extent, fires rather tend to bring bus. to the office, do they not?—I have never found that.*

Mr. Wm. Newmarch, then Sec. of *Globe* Ins. Co.—4021. Then property insured has hitherto borne all the charge of the Fire Brigade?—The property insured, charged through the medium of the fire offices. 4022. If the offices were relieved of this charge, would they be able to reduce their prems.?—The bus. of fire ins., as the members of the Committee will know quite well, is a bus. as much or more perhaps than any other exposed to incessant and extreme competition. *The tendency is therefore, and has been for some time past, constantly to reduce the prems. to a minimum.* 4023. Then the prems. being reduced to a minimum, I need hardly ask whether you think they can be reduced any lower?—Not under present circumstances. 4024. But if the offices are relieved of a certain amount of expense, it will be equivalent to their having an increased income, will it not?—The competition in the bus. of fire ins. is so intense and so constant, as to insure to the public the full advantage of any change which may take place in the circumstances of the offices.

1867.—The rates for ins. were again increased in regard to general, and not mercantile risks. The experience of the offices during the 3 years 1864, 5 and 6 had been very unfavourable. There had occurred a succession of losses almost unexampled in the hist. of fire ins. The losses had not indeed arisen from large individual conflagrations—these perhaps had been rather under than over the average; but both at home and abroad fires had been unusually numerous. These were regarded as having been in some considerable part caused by elements of danger not previously existing, in which perhaps the then recently discovered *petroleum* played an important part. Incendiarism was also discovered in an increased ratio. These combined causes led to investigation, and to a moderate increase in the rates.

In the state of matters here disclosed, it was not surprising that another Select Parl. Committee was appointed "to inquire into the existing legislative provision for the protection of life and property against fires in the U.K., and as to the best means to be adopted for ascertaining the causes, and preventing the frequency of fires." The main results of the inquiry are spoken of under their proper heads in this work. We propose only to notice here the evidence bearing upon fire ins. prems.

Mr. Sidney James Fletcher, Sec. of *Sun* Fire.—1414. You have stated that the profits of ins. cos. have been very much diminished?—Very much. 1415. Have they increased their rates on that account?—An increase of rates is just at this moment going on, but only partially; it is not a universal increase. 1416. Consequently the public are very much interested in this question, in so far as they would have to pay a larger sum for ins.?—It is quite clear that a system of losing money will not be pursued for any length of time.

Mr. P. M. Dove, then Manager of *Royal* Ins. Co.—2508. One of the results of incendiarism is an increase in the rate of prems.?—The prems. have been, in some instances, increased very considerably; and even though it is not necessary to suppose that incendiarism is greatly on the increase, to show how it affects the prem. upon ins., yet if we were to take the risk on ordinary house property, and took any amount as covering the risk, say 9*d*. p.c.—which would imply 1 fire out of every 2666 cases—if one solitary individual of that number insures for the purpose of burning his house, and carries out his intention, that one act increases the risk for ins. by 100 p.c.; and even if you were to suppose that only 1 of 10,666 set his house on fire, that would increase the ratio of the risk by 25 p.c. Consequently, it is very clear that incendiarism has necessitated a large increase of prem.; and if incendiarism could be put down, the public would be benefited very considerably, in the reduced rate of prem. which must follow. 2509. Do you think that the ins. cos. should be charged for the expenses of inquiring into fires?—I think it ought not to be so, because the whole object of the ins. cos. is to charge a rate of prem. according to the circumstances. 2510. But if an investigation was to have the effect of lessening the number of fires, the ins. cos. are interested, are they not?—They would do their part by reducing the prems.

Mr. Swinton Boult, Man. Director of *Liverpool, London & Globe.*—3429. Are the prems. for fire risks as well adjusted in proportion to the risks as the life prems.?—No, I do not think that the material exists for the same accuracy of adjustment; we have not the same data to go upon. 3430. Do you think that the prems. on fire ins. are too low?—As a general rule I do not know that I should say that they are. No doubt they are too low in certain cases; but I cannot answer a general question of that kind. If you take a particular risk, I daresay I can answer; but my impression is that generally speaking the prems. are not too low, though there are instances to the contrary, no doubt. 3431. You have seen a man in bus. who is very unsuccessful, blaming the world for it, when it is his own fault. I want to know whether you think the prems. are too low, and that that is the cause of ins. cos. complaining so much of their losses?—*I think the prems. are too low for the class of fires which we have had to meet for the last 2 years:* but then the class of fires that we have had for the last 2 years are such as the prems. are not intended to meet. *There has been so large an infusion of fires which are not accidental*—which are wilful fires beyond all question—that it is impossible for the prems. to meet those cases. 3432. You mean commercial fires?—No, not simply commercial fires. I have taken out the home fires of our estab. for the last 3 years; the fires of £2000 and under in those 3 years are equal [in amount] to all the fires that we had paid higher sums for. 3433. You have mentioned that the prems. in *Liverpool* are different from those in *London?*—Yes. 3434. What class of risks do you refer to?—Commercial risks. 3435. Are the prems. cheaper or dearer in Liverpool than they are in Lond.?—Generally speaking they are lower in Liverpool than they are in Lond. 3436. What do you think is the cause of that?—Our warehouses in Liverpool are infinitely superior to the Lond. warehouses. 3437. Are they infinitely superior to our West India Docks or London Docks?—Your West India Docks I put on a par with our Albert Docks; but our Liverpool Dock warehouses are superior in construction to the London Dock warehouses; very much so indeed. 3438. You mean those constructed by the Mersey Dock and Harbour Board; the Albert, Stanley, and Wapping Docks?—Yes; the reason for putting them on the same footing as the London Docks is this: that we have so very large an amount of cotton, which is a great cause of fire in Liverpool; and you have here so large an amount of coffee, sugar, and West India produce. We set one against the other, and we say, that *the liability to fire is with us, and the danger of extension is with you.*

The rates on the hop warehouses in the Borough of Southwark were increased 75 p.c. from Michaelmas this year, in consequence solely of the defective water supply available for fires in that part of the metropolis. See Appendix BL. *Rep. of Royal Commission on Water Supply*, 1869.

Mr. C. J. Bunyon, in his *Law of Fire Ins.* pub. this year, said:

> The rates of prem. for fire ins. are determined by the insurers from the result of their past experience upon similar risks. It is believed that no very accurate or scientific mode of calculation is attempted; but a comparison of the prems. received with the losses paid during a series of years is sufficient to enable the insurers to approximate to the value of the risks proposed to them. If the great body of fire offices united their experience, and a sufficiently scientific mode of treatment were adopted, *it is not unreasonable to suppose that the true value of risks of this nature might be ascertained with as great exactitude as the decrements of human life can be calculated by an actuary.* The great competition and natural rivalry however which exists among them, and the fact that the object for which they are estab. is individual profit, and not scientific investigation, prevents any complete combination of their experience; and the public is not perhaps the loser: for while every co., acting on its own experience, endeavours to conduct its bus. to a profit, the effect of competition will always be to reduce that profit to a minimum, and make it dependent on good management for its existence at all.

1868.—In our general Hist. of Fire Ins. we have given under date 1866 some account of the organization of the National Board of Fire Underwriters in the U.S.; while under date 1868 we have quoted from Mr. D. A. Heald's Address regarding the objects sought by that body, and the progress made towards their attainment. The following passage applies to the subject now before us:

> The great work now before this Board is a careful and thorough re-examination of risks, and adaptation of rates to risks, in such manner as shall afford impartial justice to all. To fix rates too high is a short-sighted policy, as unwise as it is unjust; and the public need no surer pledge of fair and liberal treatment, in this respect, than is to be found in the universal willingness, on the part of members of this Board, to correct errors whenever made, and the inevitable influence of competition in preventing too great an advance on the larger class of risks. Nothing can be farther from the purposes of this Board than the formation and maintenance of a monopoly. In the nature of the case such a result is impossible. An advance that would yield enormous profits would stimulate the formation of new cos. to such a degree as to defeat such a purpose, even if it were practicable to bind a body of men, as honourable and experienced as the underwriters of this country are acknowledged to be, to a scheme so unpopular and unbusinesslike. Men engaged in other pursuits of life associate in Guilds of Trade, Chambers of Commerce, and kindred organizations, for the collection and preservation of the statistics of their various trades, and no cry of monopoly is raised against them for their foresight. How, then, should an organization of this kind, with all its proceedings and actions public, be obnoxious to this charge. The evidence cited from official

> documents has demonstrated both the necessity and wisdom of the course adopted; and those who seek reliable protection for their property should be the last to complain of a union, the first object of which is to protect that which gives them the protection they seek. The true interests of the insured, and insurer, lie in the same direction; and that which impairs the capital of the latter, diminishes the security of the former. The interests of both are identical. Cap., if unproductive, will cease to be employed in a business so hazardous, and will be withdrawn altogether, leaving its place to be supplied by irresponsible cos., with little or no real security to the insured. If its earnings are too high, the well-known laws of trade will soon reduce its profits to a reasonable standard.
>
> Our true course is that of moderation in the advance of rates. Great caution and sound judgment should be exercised in bringing that advance up to a reasonably profitable point and no higher, and, in so doing, to adjust the rates of prem. to the different classes of risks as the history of each class may demand. To do this we have need of the combined experience of individual cos., and the practical skill and judgment of those engaged in the daily administration of the bus.
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> Whatever injustice may have been done in the fixing of rates has been the result of this very want of statistical information. We may safely say, that we have no data from which we can determine the actual cost of a single class of risks for a period of ten years; we may approximate to a rate on some of the safer classes, but, as a whole, the bus. is absolutely without that chart of experience furnished only by combined results carefully noted and preserved. Indeed, whenever statistics have been obtained, they have been so limited as to prove of little value to the individual, and of no value to the common interest, from the want of aggregation and publicity.

We have already seen under titles Fire Ins. Census; and Fire Ins., Classification of Risks, that the N. Board is still pursuing the work, the necessity for which is here so clearly stated.

The Hon. Wm. Barnes, Supt. of the Ins. Department, State of N.Y., in his Rep. issued this year (1868), said:

> The adjustment of a proper rate of prem. for all species of hazard on each 1000 dol. of risk carried for a year is a great public desideratum. It is fundamentally essential that this rate should be adequate to pay the losses on its own class of risks, with a fair margin or loading for expenses and profit to stock-holders. To the extent that hazards can be accurately classed and truly rated will the bus. assume a scientific character, and reach a sound and solid foundation for enduring success and prosperity. The accomplishment of this purpose can be best promoted by a general collection and compilation of the private information and experience of the individual cos., by an able committee of experts, working for the common advantage of the cos. and the public. Certain classes of risks are now written by the cos. under the pressure of necessity, with an imperfect knowledge that a resulting loss to them is almost entirely certain; other hazards are taken upon which there is a moral conviction of the absolute certainty of resulting profit. *Rates should be so delicately and scientifically adjusted that each dol. of prem. would, on the average, bear an equal peril on whatever class of hazard it might be received, in the same manner as life ins., where, although rates vary at different ages, the pressure of death is the same on each dol. of prem.* If parties could feel, in paying for fire ins., that the rate was not above the true standard for the hazard carried, bus. would be increased and facilitated, and underwriters could act more intelligently and decisively, and not so readily yield to the temptation of *under*-writing.

1871.—In consequence of the large number of fires occurring in cotton mills, a revised tariff was this year issued for these risks. (See 1875.)

The great fire at *Chicago* in Oct. this year led to a very general increase of rates throughout the cities of the U.S. The effect of the fire upon the claim per-centages of some of the Brit. offices is shown under Fire Ins., Hist. of, this date.

1872.—Mr. John M. M'Candlish, in his excellent Address before the Actuarial So. of Edin., already quoted in our gen. Hist. of Fire Ins., offers the following practical obs. regarding prems.:

> The risk of loss by fire is affected by innumerable circumstances. There are, in the first place, the chances of the fire occurring; then the chances of its spreading; or in other words the greater or less likelihood of its being speedily extinguished; the chances of damage by water and smoke; and the greater or less prospect of salvage. One or all of these chances will depend upon the structure of the building which is insured, or which contains the goods insured; the materials of which it is composed; and the mode in which it is lighted and heated. In the next place, the contents of the building have to be considered: whether they are liable to catch fire easily, or are capable of spontaneous combustion; and in this connexion it has often to be remembered that two sorts of goods, neither of them very hazardous in themselves, such as oil and wool, may become extremely dangerous when brought together: and, indeed, as the addition of oil, and even of water to certain kinds of goods, will often cause them to take fire, their liability to this admixture requires to be looked to. Then there are the manufacturing processes carried on, which involve great diversity of risk, and of corresponding rates of prem. from the 2*s.* 6*d.* p.c. charged to blacksmiths, to the £8 8*s.* p.c. charged in some cases to the sugar-refiner. Lastly, there have to be considered what may be called moral hazards: the risk of wilful fire-raising; and the risk of criminal negligence. There is a greater variety in this class than might be supposed. Property is set on fire wilfully, in order to cheat the ins. offices, or to cover theft or other crimes, or from spite and ill-will; or, as has happened in some cases, in the hope of some paltry collateral advantage. And there can be little doubt that a depressed condition of trade, unsalable goods, and machinery working at a loss, often produce a careless disregard of ordinary precautions against fire which is akin to arson.
>
> Besides these various elements of risk, others constantly suggest themselves. Suppose, for example, that goods stored in a warehouse of a given construction may be safely insured at a certain rate, what will be the effect of opening up a communication with a similar warehouse closely adjoining? Here, each warehouse continues to be involved in the same risk as before; *and in add., there is the risk of its being set on fire from the adjoining warehouse.* An increased rate is accordingly demanded in consideration of the communication between the buildings. Thereupon the owner of the premises removes altogether the dividing wall, and there is one large warehouse instead of two smaller ones—and he escapes the charge for communication. The risk, however, is not lessened, but increased; and the offices are driven to rate the property according to its magnitude. But here they require again to discriminate. If they charge in proportion to the cubical contents of the building, the higher the roof is, the higher will be the rate; but height of roof is often an element of safety: so they make, perhaps, an arbitrary rule as to height—that no floor is to be reckoned as if it were more than 10 ft. high. Here, again, they find their flanks turned. A merchant builds his tall warehouse without intermediate floors; piles it up to the roof with bales of some combustible material, and pays a lower rate than if he had the same quantity of goods lying side by side in a warehouse of greater extent, but of less height; although the risk he exposes the offices to is really greater.

> Much of the difficulty experienced in these and similar cases arises from neglect of the truth already adverted to—that it is the insured, and not the offices, that must ultimately pay for all losses. Selfish and short-sighted persons (and most selfish people are short-sighted) act as if the interests of the ins. offices were adverse to those of the insured. Their aim is to get insured cheaply, instead of to prevent fires: in forgetfulness of the truth that for all fires that occur in their particular trade or locality, they and their fellows must ultimately pay. [See Mr. Robb's paper, 1874-5.]

The great fire at *Boston*, U.S., in Nov. this year, called further attention to the subject of a tariff adapted to the requirements of that country. Before the occurrence of this second great catastrophe, the *Ins. Times* of N.Y. had urged the consideration of the question as follows:

> In the U.K. the Tariff Asso. has to fix distinct rates for certain localities. There is a special tariff, for instance, for Belfast in the North of Ireland. The nature of the buildings in that great manufacturing city—erected of brick, with generally a single brick partition wall three inches thick—and the inflammable contents of many of these, render the spread of a fire so certain that it takes a special tariff rate to meet the extra risks in Belfast. But the minimum rates, even there, are fixed by the Tariff Asso. in London, and all the agents in Belfast must obtain these rates, at least, or else the risks will not be accepted at the head offices of the different cos.
>
> There is nothing to hinder the National Board of Underwriters of the U.S. from fixing a minimum tariff of equitable rates for every city, town and county in the States. The "experience" of the various cos. in all the length and breadth of this Republic can be made available for this purpose.
>
> Local agents and local boards are at present puzzled in many cases as to how they ought to act. In one city a board fixes a certain scale of rating from which the board in a neighbouring city entirely differ. There is, therefore, a thorough want of uniformity in the ratings. This will prove highly injurious with the public, and should be avoided. But in order to preserve anything approaching to uniform rating, and something like system in fire underwriting, the National Board must prepare and pub. a scale of minimum rates *for the entire U.S.*; even embracing *special tariffs* for certain cities, towns and districts, which include peculiar risks within their bounds.
>
> Every co. then, united in the association, should print their own set of books of rates from this minimum scale, and furnish each agent and canvasser with a copy for private and confidential use in transacting the bus. of the co.

Captain Shaw pub. his excellent little book: *Fire Surveys; a Summary of the Principles to be Observed in Estimating the Risk of Buildings.* This is the only practical work which has appeared in the U.K. upon the subject of which it treats during the present generation. [Fre Protection.]

1873.—Under this date, in Fire Ins., Hist. of, we have quoted an art. from the *Review*, wherein reasons are urged for careful inquiry into the causes of fires, in view of fixing proper rates for each class of risks; and also in regard to tariffs, in view of dealing equitably with the special hazards, rather than of throwing the burden of these upon the normal rates.

At the July meeting of the Crystal Palace Co. Mr. Thomas Hughes, M.P., the Chairman, referring to the rate demanded by the fire cos. for insuring the Palace—viz. 31*s.* 6*d.* p.c. instead of 15*s.* 6*d.* as heretofore—mentioned that the directors *had hopes of placing the risk with some foreign fire offices at less cost;* and also that they proposed to become their own insurers, *by forming a fund among themselves, each taking not less than £*100 *at* 21*s.* p.c. The invitation to the shareholders to join in the movement did not meet with a ready response. In the report presented at the next meeting, the charge for fire ins. appears at the £1 11*s.* 6*d.* rate, with the significant observation that "some difficulty was experienced in effecting the ins. at the increased rate." He then pointed out that there was another way in which the Co. might become its own insurers, viz. by setting apart an ins. fund. He had prob. forgotten the destruction of the north wing by fire in 1866. The offices had not.

Mr. H. A. Oakley, President of the National Board, U.S., in his Address to that body this year (1873), said:

> We now come to the consideration of one of the most important topics connected with our operations—the subject of "rates." Three years of demoralization of rates had made the task set your Executive Committee at the last ann. meeting one of great difficulty. The spasmodic advance after Chicago, in Oct. 1871, had passed away, and at the time of our ann. meeting last year, the average rate had settled down to what it had been during the early part of the previous year. This we all felt and knew was entirely inadequate, *and a large and decided advance was vital to the bus. of fire ins. in this country.* How to secure this without exciting too strenuous opposition was the delicate task to be solved. A sense of the justice of our demand, and a determination to secure proper compensation for the risks we assumed, was the result arrived at; and when it was directed that rates were to be advanced at least 50 p.c., or bus. declined, it was met with good feeling on the part of the public, and cheerfully acquiesced in, for they had been learning the truth of the saying, that the safety of ins. was not alone in cap., but depended largely upon adequate rates. . . .
>
> The further advance ordered by the Board in Nov. 1872, has also been made, *and to-day the rates of prem. are, for the first time in many years, nearly commensurate with the hazards of the bus.* I say nearly, because they have not as yet been thoroughly adjusted to the diverse localities covered by the Board. In order to secure greater equity in rates, the Executive Committee in Sept. last issued a *Schedule of Rates*, applicable mainly to stores and bus. risks. It has met with great favour, and wherever adopted, as in the cities of Buffalo, Toledo, Evansville, and others, has led to excellent results, discriminating as it always does in favour of the better class of insurable property. The N.Y. Schedule system, better adapted to the rating of large cities, like Philadelphia, Boston, Chicago, or St. Louis, is in full operation in N.Y. City; *and by its judicious charges for deficiencies in buildings is doing almost as much towards securing desirable structures for ins. as a law regulating their construction.* We most cordially commend this Schedule system to all large and growing towns, being certain that under it much of the complaint which is sure to follow an advance of rates is met, when it is shown that all good buildings can still be insured at moderate rates. I would mention that under the N.Y. Standard, there are buildings, that with their stocks are rated as low as 45c., while the average rate throughout the city on bus. risks is from 90c. to 100c.

The *Ins. Times* of N.Y., in an art. which appeared in its Nov. issue, started a theory *that the tendency of high rates was to reduce losses*, and supported its position by arguments which we can only reproduce in abstract:

> One of the noticeable features in the hist. of fire underwriting in this country is, the tendency of high rates of prem. to produce a lower ratio of losses; *not a lower ratio of losses as compared with the prem. receipts, for that follows as a sequence to increased rates, but absolutely a lesser ratio of loss to amount insured.* This fact is one of the most encouraging features of the present condition of rates largely advanced over those of former years, and should encourage the friends of the National Board to redouble, if need be, their efforts in sustaining the power and efficiency of that Board. If the result of advanced rates is merely to lessen the ratio of loss to prem., half the beneficial effect is lost. *Every year of high rates has been a year of low ratio of loss to amount insured; and herein lies full half the advantages derived from the labours of the Board.*
>
> The cause of such reduction in the absolute ratio of loss may be found in the increased care and caution induced by reduced insurance on the part of property-holders. *When rates are advanced, the amount of ins. is in a vast number of cases reduced, and the lack of ins. is sought to be made good by increased care in the preservation of the insured property, thus restoring the wholesome relations between value and ins.* It is undoubtedly true that the cos. are now receiving as much prem. as last year with very large reductions in the amount at risk. This reduction will equal fully 20 p.c. in the grand aggregate, and the increased margin, now at the risk of the insured, is equal to, if not better than, the advance in rates, large as it has been. The effects resulting from the reduced amount covered are not so immediately discernible as those of increased rates, owing to the fact that cos. are now paying losses on old ins. not influenced by this add. care on the part of the insured, while increased rates are easily ascertained daily. The one produces immediate results, the other is more slow in its operation, yet not less certain or valuable.

The practice of "Schedule Rating," which had been advocated by Genl. Ducat as early as 1863 [FIRE INS. PRACTICE], now received a great impulse in the U.S.; and it will be useful to review it at this point.

The system is known as "Schedule Rating" from the circumstance that for each class of risks a schedule is prepared which brings before the agent or surveyor all the leading points to be regarded in determining the proper prem. to be charged. We may give an example. In the cities and towns of the West more particularly it is a matter of constant occurrence that a brick building—itself a superior risk—will be surrounded by a number of timber buildings, and from them "exposed" to hazard altogether beyond its own internal or intrinsic hazard.

By the Schedule in use by some of the Western State Boards (Harris's), separate tables (Nos. 1, 2, 3 and 4) are therein provided for ascertaining the various amounts to be added to the detached rate of either a one, two, three or four story brick building, having 16-inch fire walls, composition roof and stone or metal cornice, *exposed* by one or more, one, two, three or four-story frame buildings, not exceeding 20 feet front, nor extending, either front or rear, beyond the depth of side walls of the brick exposed, and occupied for non-hazardous purposes only: and a specific amount is designated, to be added for *each* frame exposure, *according to its height* and distance from, or relative position to, the risk exposed. Here are the T.:

TABLE No. 1.		Additions for Frame Exposures.				
Brick Risk.	Frame Exposures.	Adj.	20 to 40 2nd.	40 to 60 3rd.	60 to 80 4th.	80 FEET. Ea. Addl.
	One Story	35	21	14	7	3
ONE STORY......	Two ,, ...	45	27	18	9	4
	Three ,, ...	55	33	22	11	5
☞ *See Note.*	Four ,, ...	65	39	26	13	6

TABLE No. 2.		Additions for Frame Exposures.				
Brick Risk.	Frame Exposures.	Adj.	20 to 40 2nd.	40 to 60 3rd.	60 to 80 4th.	80 FEET. Ea. Addl.
	One Story	30	18	12	6	3
TWO STORY ...	Two ,, ...	40	24	16	8	4
	Three ,, ...	50	30	20	10	5
☞ *See Note.* ...	Four ,, ...	60	36	24	12	6

TABLE No. 3.		Additions for Frame Exposures.				
Brick Risk.	Frame Exposures.	Adj.	20 to 40 2nd.	40 to 60 3rd.	60 to 80 4th.	80 FEET. Ea. Addl.
	One Story	25	15	10	5	3
THREE STORY...	Two ,, ...	35	21	14	7	4
	Three ,, ...	45	27	18	9	5
☞ *See Note.*	Four ,, ...	55	33	22	11	6

TABLE No. 4.		Additions for Frame Exposures.				
Brick Risk.	Frame Exposures.	Adj.	20 TO 40 2nd.	40 TO 60 3rd.	60 TO 80 4th.	80 FEET. Ea. Addl.
	One Story ……	20	12	8	4	3
FOUR STORY …	Two ,, ……	30	18	12	6	4
	Three ,, ……	40	24	16	8	5
☞ *See Note.*	Four ,, ……	50	30	20	10	6

The "note" referred to in the T. is as follows:

For Rating a Brick Building Exposed by Frames.—To the rate on the Brick as a *detached* risk, add (according to Table No. 1, if a one-story brick; Table No. 2, if a two-story brick; Table No. 3, if a three-story brick; and Table No. 4, if a four-story brick), beginning with the amount designated in the table for the first or adjoining exposure *according to its height,* and to that amount add the amount designated for the second frame according to *its* height; and to the amount so ascertained add for each additional frame occupying the third, fourth, or more remote position from the risk, according to *its* height and relative position or distance from the risk, as specified in the table annexed:

EXAMPLE 1. Rate on two-story brick exposed by three two-story frames. Detached rate on brick, say 1·40; Exposure rate (see T. No. 2) for adjoining, or first two-story frame, is 40 cents, second is 24 cents, and third is 16 cents: making exposure rate 80 cents, or whole rate on risk $2·20.

EXAMPLE 2. Same risk, exposed first by four-story, then a three-story, than a two-story, then a one-story frame. (Table No. 2.) First, four-story is 60 cents, second, three-story is 30 cents., third, two-story is 16 cents, fourth, one-story is 6 cents; making exposure rate $1·12, or whole rate $2·52; and as last figure is under three, drop the 2 and call the rate $2·50.

Additions to be strictly adhered to.—For shingle roof on brick building, add 50 p.c. of whole exposure rate; open walls, no iron shutters, 40 p.c.; ditto, with iron shutters, 10 p.c.; wooden cornice on brick, 20 p.c.; 12-inch wall exposed, 10 p.c.; 8-inch ditto, 15 p.c.; Frames, if adjoining, each extension beyond brick 5 feet, 10 p.c.; ditto, 10 feet, 15 p.c.; ditto, 15 feet, 20 p.c. For any frame occupied for hazardous purposes, rating at over 2 and under 5 p.c. as a detached risk, increase the designated exposure rate for such, in proportion as 2 p.c. is to such higher rate as a detached risk; and for frames occupied for specially hazardous purposes, increase the designated exposure rates in proportion as 1½ p.c. is to such higher rate as a detached risk. When the last figure of the total rate on risk and exposures is 3, 4, 8, or 9, increase it to 5 or 0.

Deductions Allowed.—For metal roof on brick exposed, deduct 15 p.c. of whole exposure rate; a space of 5 feet between risk and first exposure, 5 p.c.; 10 feet ditto, 10 p.c.; 15 feet ditto, 20 p.c.; 20 feet ditto, 40 p.c. For any space of 20 feet in row of exposures, pass the amount designated for an exposure, if one had existed where the vacancy occurs, whether it occupies the first, second, third, or other relative position in the row, to risk exposed. When the last figure of the total rate on risk and exposures is 1, 2, 6 or 7, diminish it to 0 or 5.

In all this will be seen an earnest desire to make the bus. of fire ins. a paying bus. This can only be done by placing each particular risk accepted on a proper basis. The "average system," that is, the old method of placing bad and good risks together, in the belief that over the whole the bus. would be made to pay, may be said to be exploded. The interest of agents and underwriters may be expected to increase in the exact ratio of the scientific exactitude with which the bus. is conducted.

1874.—There was pub. in Philadelphia this year, by Mr. William Frazier Ross: *The Estimation of Exposures, or External Hazards in Fire Ins., with Schedules and Formulas for Rating Risks, and Stenographic Formulas for Denoting Risks and Rates.* This is another contribution towards perfecting the practice of schedule rating.

1874-5.—Mr. J. Robb read before the Ins. Institute at *Manchester* during this session a paper, *Accumulation in Fire Risk,* wherein occur the following obs., forming a very apt sequel to the subject of schedule rating:

> The assessors of F. rates will never, we believe, arrive at what life actuaries know as pure prems. The latter have T. of mort. for their guidance, and inflexible laws to follow, of which we possess no analogy. Theirs is a Calvinistic creed, whilst ours is an Arminian belief, if I may borrow such terms. They have certainties and experiences of the most undoubted character, whilst we have chapter after chapter of accidents and experiences of the most varying description. Whilst they can apply one set of prems. to a whole country, or even to a couple of the earth's zones, we have to discriminate between prems. which *ought* to be paid and prems. which *will* be paid; and very frequently to ask whether what can be had in Manchester can be secured in Sheffield; or what is paid in Lond. will be paid in Bristol for identical risks. If we allow our investigations to travel too wide, we may be landed in a hopeless state of scepticism as to all fire rates whatsoever; but notwithstanding the state of confusion in which we appear to be, there are certain facts and figures by which we may be guided in seeking safe sailing room. The classification of the most important risks, and the more or less well-known results in prems. and losses in these are something to go by; *and the observation and experience of those daily accustomed to look at risks in the light of danger from fire is something more.* The assessor of fire rates must be able, or should aim at being able, to

> arrive at his conclusions from the nature of the risk offered to him, upon consideration of all the circumstances connected with it; although he may not always be able to adhere strictly to his own conclusions, *owing to the market price differing from the intrinsic price.*

The preceding is, however, only introductory to the proper subject of the paper, viz. Accumulation in Fire Risks. "The theory of accumulation in fire risks (the author says) I may describe *as the growth of the danger of fire;* and the *increase of the area of fire* (when fire happens) from one degree to another;" and he proceeds to illustrate his position by the following example :

> I will only begin with our old friend, the "1st class risk." . . . I presume our *beau ideal* of a risk of this description is a brick and tile cottage, detached, lighted with gas, and warmed by ordinary coal grates. No one dreams of asking more than 1*s.* 6*d.* p.c. for that; but some offices have threatened to take less. We believe that the rate is sufficient, and would not be surprised if it were shown to be excessive. Suppose this cottage is turned into a grocer's shop and dwelling-house, but no hazardous (in the conventional sense) goods are kept: we hold that an accumulation of risk has taken place. Although it may not always be easy to demonstrate it, to the simple dwelling risk is added the risk arising from the storage and exposure for sale of certain goods. If the grocer takes to selling oils of a dangerous character, and keeps a quantity in the house or shop, a further accumulation of risk has taken place, and the rate alters accordingly. Then, if he cannot pay his gas bill, and takes to lighting his premises with naphtha lamps, the risk is still further enhanced, and the rate should indicate this. Again, supposing his chimneys smoke, and he introduces a hot-water apparatus on the high-pressure principle, with pipes snugly ensconced close to his counter and along his wooden stair, another serious accumulation has taken place. If, still further, he finds the tiles on the roof too good conductors of heat, and having an injurious effect on the condition of the "Stiltons" deposited in his attic in summer, or permitting of inconvenient refrigeration of his castor oil in winter, he remove the said tiles and have the building covered with thatch, it may be assumed that accumulation has reached a limit where the assessor dare scarcely follow. But suppose him to be a man who believes there is a rate for every risk, and has the courage of his opinions, having almost exhausted the capacity of the individual risk, the theory of accumulation will enable us to proceed to even greater extremes. And although drawing an imaginary picture, examples will occur to all matured fire practitioners of analogous cases.
>
> Well, the simple cottage having been so transformed in its internal arrangement and condition, and in its external construction, we may now suppose that an enterprising building speculator admires the site, and erects a row of neat and picturesque cottages on each side of the grocer's shop, these also having thatched roofs: this altered condition of things is a new element of risk, and a further accumulation. Then we can easily fancy that the builder sets up a workshop near, say with a large carpenter's shop, and machinery for cutting up, and otherwise manufacturing timber, and a well-stocked wood-yard all round, and extending pretty close to the orig. risk; here again we have an increase in the prob. of fire. Nor need we stop here, but advance to another branch of the theory, by supposing that our grocer, owing to the extension of the village and increase of the surrounding pop., has found his trade so extended and increased that the old cottage is no longer sufficient for the requirements of his bus. Thereupon he employs the builder to pull down his back walls, and add a large warehouse to the rear of his premises, into which, when completed, he has a greatly increased stock, and of varied description, conveyed and stored; and where he has sundry apparatus and appliances introduced in connexion with his bus., such as a coffee-roaster, mill for grinding or crushing spices and the like. We at once see that with all the already piled up accumulation, a serious add. has now been made, and that more prem. still is needed to meet the enhanced risk. . . .

He points out that there are "other supposable features" in the case; and then passes on to another aspect of the subject :

> The greatest liability to err is usually found when lesser items of risk are superadded to greater; and this view of the question I have found it most difficult to convince some people of. I take it to be a radical fallacy that in the case of a risk fairly ratable, say, at 5*s.*, the add. of a trade or process fairly, in itself, ratable at, say 2*s.* 6*d.*, does not call for an increase of the rate. Yet people in our bus. will often say that the larger covers the smaller. This is the direct opposition to the theory I am now endeavouring to illustrate. Let me suppose a case. There is a joiner's shop in a building, the rate being 15*s.* In the same building there are unoccupied rooms, which by and by are taken and used by a tailor as a workshop, having oven for irons, etc., whose rate in a building in his own tenure only would be 3*s.* By our theory the rate should, with such add., be 18*s.*; but many would say the 15*s.* carried the 3*s.*, and make no add. to the former rate.
>
> In the case of manufacturers generally, I think it will be conceded that the effects of accumulation have hitherto been taken into account in our tariffs in a very perfunctory manner. In the cotton and corn mill tariffs alone, we may almost say, has the principle being recognized, and in the former only recently and in a partial degree; and yet how important a factor it is in all such risks! If we admit that there is danger in certain processes, we cannot deny that the danger is increased, *pro rata*, with the extent of the process. If a mill, say, has a certain amount of risk with 10 carding engines, and a corresponding number of spindles, the risk will be doubled if there are 20 cards, and twice the number of spindles. All we provide for now, however, is a very modest increase for every extra 10,000 spindles in cotton mills. The same argument will hold good as to the extent of woollen, worsted, flax, and other mills; charges for height cannot fairly be taken as any recognition of our principle. The effect of the non-recognition of the principle is frequently to place the insuring offices in the position of having rates utterly inconsistent with the risks undertaken; and instances of the kind are constantly occurring in our experience.

The subject is again discussed under MILLS. The following qualifying observations require to be noted :

> The theory of accumulation must not be applied in an arbitrary manner, but with discretion. For instance, it would not be fair to say that if a building originally in *one* tenancy had a second tenant introduced, both tenants being of the same degree of hazard, that the first rate should be doubled. The full increase should not be asked, because the second tenant displaces as much of the first tenant's place as he occupies himself; and only so much more should be charged as the risk is increased by plurality of tenure. In the case of a mill the add. of tenants does not rule the rate of accumulation, but, more particularly, the quantity and nature of the machinery introduced additionally.

Many of the points here discussed strike at the very root of successful underwriting.

1875.—In consequence of the continued losses upon cotton mills—four large mills were destroyed at *Preston* in rapid succession—the tariff (England and Ireland) for these risks was again (Nov.) increased. (See 1871.) The rates now stand : 1st Class (not spinning lower than 80's) 20*s.*; 2nd Class (not lower than 34's) 25*s.*; 3rd Class (not lower than 20's) 30*s*.; 4th Class (not lower than 20's) also 30*s*.; and an add. prem. for each 10,000 spindles in a mill over 10,000, 2*s*. p.c. Other items as before.

It is stated, on what appears good authority, that the losses of Ins. Cos. in the *Manchester district* this year, chiefly in the cotton trade, were no less than £1,100,000; whilst the prems. received reached but £800,000. In Nov. the rates (as we have seen) were increased. In the 3 months which followed the losses were estimated at £200,000.

In the U.S. each class of risk appears to be undergoing a process of overhauling. Thus "The State Farm Board of Fire Ins. Cos." met in Utica, N.Y., in Nov. this year. It was soon apparent, on a comparison of "experiences," that the rates now charged were quite inadequate to the present rates of claims and expenses; and it was

> *Resolved*, That the secretaries of the different cos. furnish the Sec. of this Board a detailed list of all losses paid during the last year on farm property, arranged by counties, giving names of losers, post office address, and amount paid. Said lists to be furnished prior to October 25th. The Sec. shall have the same printed, omitting the names of cos., and shall furnish to each co. as many copies as it may order, for the use of its agents.

The *Equitable* Fire (Manchester) is extending the principle of reduction of prems. in respect of admitted improvements of construction and fitting, and of fire extinguishing appliances in mills. Hence a reduction of 20 p.c. from the Cotton Mill Tariff is allowed on conformity to the following arrangements, to be certified by the Co.'s Surveyor:

General Arrangements.—1. Walls substantial. 2. Floors substantial and in perfect condition, having no openings through them for any purposes whatever. 3. Means of egress sufficient. 4. Main gearing outside the mill. 5. Cleanliness and lighting-up attended to systematically and efficiently.

Fire Extinguishing Appliances.—1. A sufficient supply of buckets and brushes, or l'extincteurs and small hose in each room of the mill. 2. A steam fire engine with hydrants from the same over the works, and on every floor of the mill, with hose and fittings sufficient throughout.

Mr. C. C. Hine, Ed. of *Ins. Monitor*, N.Y., has produced a little book which especially calls for mention here: *Letters to an Agent, from the Patriarch; a Familiar Book of Instructions for Fire Agents, in which divers topics are treated in a manner quite unlike that adopted by the more formal writers*, wherein will be found a large amount of practical wisdom, the result of long experience of the bus., conveyed in a manner at once pleasing and instructive. Such a work is much required by fire agents in the U.K.

The increase in F. ins. prems. in regard to certain specific classes of risk during the last quarter of a century is quite remarkable, and at first sight not easy to be accounted for by the uninitiated. Conspicuous in this respect are *Flour-mills*. Within the period named the rate has increased from 2*s*. 6*d*. to 21*s*. or more—varying much with the particular circumstances of the risk. Some of the causes for this may be gathered from our art. EXPLOSIONS, sub-heading *Flour-mills*. The subject will be further considered under the alphabetical title. Again, in the case of *Pianoforte Manufactories*: these were formerly taken at 5*s*.; from that they have gone up to 63*s*., they are now down to 52*s*. 6*d*. In *France* the charge is still about 8*s*. *Theatres* afford a further instance. These will be spoken of under their proper head, as will many other classes of special risks. [FIRES, CAUSES OF.] [FIRES AND FIRE INS., STATISTICS OF.]

FIRE INS. PREMS., PAYMENT OF.—See FIRE INS. RENEWALS.

FIRE INS., PROOF OF CLAIM.—See FIRE INS. LOSSES, ADJUSTMENT OF; FIRE INS. CLAIMS, PAYMENT OF.

FIRE INS., REINSTATEMENT IN.—See FIRE INS. LOSSES, PAYMENT OF; FIRE INS. PRACTICE, 1680; and REINSTATEMENT, under which latter the whole subject will be fully discussed.

FIRE INS. RENEWALS.—It has been the custom since the early part of the last century—prob. arising out of the system of quarterly prems. introduced by the *Sun* in 1710—that the renewals of fire pol. should take place at one or other of the four usual quarter-days of the year. When a new ann. fire pol. is taken out—to *short-term* ins. the system does not apply—the prem. is calculated by "odd time" up to the nearest or next quarter-day; from whence the pol. becomes annually renewable afterwards.

A certain time beyond the quarter-day is usually allowed in the U.K. Originally this varied from 40 days in some of the early offices downwards. In 1782, by the 22 Geo. III. c. 48—*An Act regulating the Duties on F. Ins.*—the period was fixed at 15 days. This period is technically designated the "DAYS OF GRACE," under which title we have discussed the law of the subject.

It will be sufficient here to state generally that where fires occur during these days of grace, *the prem. not being paid, the ins. co. is not liable.* The question turns upon the conditions of the pol. No custom can be founded on the days of grace. The practice in different offices varies.

The days of grace expire respectively on the 9 Jan. (for Christmas renewals), 9 April, 9 July, and 14 Oct. Where either of these days falls upon Sunday, Good Friday, or a public fast day or holiday, the prem. falls payable on the preceding day.

1796.—The case of *Tarleton* v. *Staniforth*, before the Brit. Courts this year, is a leading case upon the subject. [DAYS OF GRACE.] (See 1805.)

1805.—The case of *Salvin* v. *James*, determined in the English Courts this year, dealt with some incidental points arising out of the days of grace, regarding concealment of pol., etc. [Days of Grace.]

That the incidents attaching to renewal of fire pol. had become quite understood, as a matter of office practice, at this date, may be seen by reference to our art. Fire Ins., Conditions of, where the 29th condition of the *Westminster* Fire Office, there quoted, places the matter in an unmistakably clear light.

1860.—Under the 23 & 24 Vict. c. 111 (sec. 8) the renewal receipt was made chargeable with the duty. Happily that has all passed away with the repeal of the duty.

1873.—In the U.S. the custom of making renewals payable at quarter-days does not obtain. During this year a movement was made in favour of the plan, but nothing came of it. No days of grace are allowed there. [Renewal of Ins. Pol.]

On the Continent of *Europe*, where fire pol. are usually made for terms of years, it is a practice with many offices to send and collect the renewal prems. It has been attempted to found a custom upon this. The details are stated in the following case.

1874.—At *Geneva*, the action was brought by James Massip against a fire ins. co. of Basel called *La Baloise*. It was upon a pol. of ins. which contained the following clause: "The ann. prems. shall be paid within 14 days from the expiration of each and every year covered by the pol., and in case of the non-payment of any prem. within the said period of fourteen days, the pol. shall cease and determine." The pol. was issued on the 5th of Sept. 1870, and was to remain in force until the 5th of Sept. 1880. A fire occurred on the 23rd of Sept. 1872, by which the building insured, which was of wood with a tile roof, and used for the manufacture of iron furniture, was destroyed. The co.'s agent wrote the plaintiff on the 28th of Aug. previous to remind him that the ann. prem. would become due and payable on the 5th of Sept., but the plaintiff neglected to pay it, and it had not been paid when the fire occurred. The co. refused to pay the amount insured, which was 15,000 francs, but tendered a part of this amount by way of compromise.

Upon the trial of the case before the court of first instance, the Commercial Court of Geneva, the plaintiff offered evidence tending *to show that it was the custom at Geneva for all fire ins. cos., whatever were the precise terms of their pol., to send themselves and collect their prems. when they became due.* They contended that this custom was in the highest degree for the public benefit, especially in an industrial community like that of the Canton of Geneva, and that it was for the interest of the ins. cos., as well as for that of the public at large, that it should be upheld. The Commercial Court sustained the custom, and held that, as the term for which the pol. was to remain in force was ten years, and the precise time when the prems. were made payable was not of the essence of the contract which was of a public and official character, the evidence offered was sufficient to estab. the existence of the custom alleged. *The Court held that, the custom having been proved, the time fixed by the express terms of the contract for the payment of the prems. was waived, and that by virtue of the custom a new and different contract in respect to the time of payment was substituted in the place of that contained in the pol.* The Commercial Court accordingly gave judgment for the plantiff.

The judgment was, however, reversed upon going to the Court of Appeals. This Court *held that the evidence offered was not sufficient to estab. the existence of the custom.* The practice which obtained in the Canton of Geneva in respect to the collection of prems. was the less conclusive, by reason of the great variance in the terms of the pol. issued by different cos. The Court of Appeals held that there was nothing in the mode in which the co. against whom the action was brought, *La Baloise*, transacted its bus., which amounted to a waiver of the express provision of the pol., and that it was the duty of the Court to enforce the contract as it stood, without regard to any complaints for unreasonable severity which were made against the co. It was a matter for parties themselves to determine with how much rigour they should insist upon the precise terms of their contracts.

Upon judgment being rendered in their favour in the Court of Appeals, the co. renewed its offer of compromise, which was made immediately after the fire, but the plaintiff, Massip, respectfully declined the offer. He acknowledged his obligations to the officers of the co. for their generosity and sympathy, but said that, under the decision of the Court of Appeals, he was not entitled to any indemnity, and paid the costs of the action as required by the judgment.

From a very early period it has been a regulation with ins. offices that *renewals can only be properly effected by means of a printed receipt, issued from the head office of the co., or otherwise under proper authority.* [Fire Ins. Practice.]

For some of the important questions which arise in regard to the proper renewal of fire pol., see Lessee. [Cancelment of Pol.] [Forfeiture.]

FIRE Ins. Reserve Fund.—The principles which should regulate the formation of a Reserved Fund in a Fire Ins. Office have never been very clearly defined in the U.K. It is quite time that they were defined. We have made an attempt to elucidate the subject under Fire Ins., Finance of. It is quite certain if there be no Re-insurance Fund, or debit for Re-insurance in the bal.-sheet, that the Reserved Fund must at least equal the charge for re-insurance of unexpired risks—otherwise the cap. must be held to be impaired. That is the rule laid down in the U.S., and we have never seen it controverted. A Reserved Fund, strictly speaking, means something in hand beyond the Re-insurance Fund.

FIRE INS., RISK INSURED AGAINST.—When the contract of Fire Ins. was first introduced, it embodied no limitations, and therefore no refinements regarding the scope of the risk undertaken. A building was insured; it was destroyed in part or wholly by the operation of fire, and the loss was paid, or the building reinstated. But even here a question might have arisen. A house or building might be destroyed by an *Earthquake.* Earthquakes are supposed to be occasioned by the subterranean action of fire—was a house shaken down by an earthquake to be regarded as destroyed by fire? The fire offices on the Continent of Europe now almost unanimously except in express terms damage by earthquakes from among the risks insured against! Damage by *lightning* is a matter of more frequent occurrence, and was at a very early date the subject of consideration in relation to F. ins. contracts.

When fire ins. became extended to goods, to stock-in-trade, to raw materials in the hands of the manufacturers, and even to materials in various processes of manufacture, the incidents of fire ins. took a much wider range. It was not to be expected that the framers of the ins. contract could foresee all the chances of fire which might arise; and not foreseeing them, they could not exclude them from the ins. The actual risk insured against then could only be defined by experience extending over years. We do not intend to follow in detail the cases as they arose in practice. That would be, however interesting, a tedious process. We can perform our duty to our readers in a more simple manner.

The first writer, so far as we remember, who attempted to define the risks insured against under fire pol.—and therefore those not insured against—was Mr. George Beaumont; and although the half century which has elapsed since he wrote has changed the law and the practice, his remarks can now be read with interest and instruction.

1833.—Beaumont's *Law of Fire and Life Ins.*, p. 38:

> Fire must be the immediate agent. This includes lightning; but in the case of live stock struck by lightning, the mark of fire must appear on the carcase, otherwise it may be a case of death occasioned by the electric shock alone, which is not a loss by fire. Fire produced by the friction of a wheel upon its axle, which consumes the wheel, is a loss of the wheel by fire. The burning of a barrel or other vessel containing quick-lime, which is accidentally submitted to the action of water, is a loss by fire as to the vessel, but the spoiling of the lime is not such a loss. So the spoiling or consuming of any two chemical fluids or bodies by the process of combustion ensuing on their combination, is not a loss by fire as to either of the substances, but as to any third body it is such loss. Similarly heat or fire produced by vegetable fermentation, as when a hay-rick takes fire by its own heat, is not a loss by fire as to the vegetable collection, but as to adjoining bodies it is. The whole hay-rick is considered as under the fermenting process, from the difficulty of ascertaining which part was so, and which part was consumed by heat communicated therefrom.
>
> Another distinction is, that where fire is actually applied from design, as in the culinary and several manufacturing processes, any loss by misdirection of the process is not considered as coming within the object of ins., inasmuch as the application of heat was not by accident, and the consequential damage of over-roasting and the like is not separable from the original design of applying the flame for the due process.
>
> But clothes hanging to dry, meat under process of curing by the slow action of smoke, if destroyed by the flame from the fireplace, are losses by fire.
>
> So if any part of the building adjacent to the fireplace, as the chimney, the timber-work round the fireplace, and the like, be damaged or destroyed by fire coming from the grate, these are proper objects for indemnity. But the grate itself, oven, boilers, and other culinary apparatus, or any apparatus containing or applied to fire for conducting manufacturing process, if destroyed, or damaged by the fire which they contain, or to which they are applied, give no claim for indemnity.
>
> We have included in the foregoing remarks that an essential circumstance of the loss must be that it is *accidental.*

1847.—Passing to a more recent authority, writing with the experience of the later cases before him, we find Mr. Bunyon, in his *Law of Fire Ins.*, speaking upon this subject as follows:

> First, then, the loss must be by fire, that is to say, by the actual ignition of the property itself, or some substance near to it not intended to create heat. Damage arising from the use of a stove or a furnace intended to give out heat, but where there was no fire except of the fuel placed in it for combustion, would not give rise to a claim upon a pol. . . . Injury arising from wear and tear, and from mistakes in manufacturing operations, although caused by the use of fire, is not damage by fire within the meaning of a pol. The contract itself is one intended to guard against unusual contingencies, and it may, perhaps, be laid down as an axiom, *that there must be an accident by fire;* and this in the ordinary acceptation of the term, to lay the foundation of a claim. It is not, of course, intended that the property must be itself on fire, since losses by smoke and water, when the fire has not touched the objects injured, are familiar to all managers of ins. offices, or to exclude fires by the incendiarism of third parties. All that appears to be necessary is, *that something* should have caught fire, and damage have been thereby occasioned to the insured property. Thus smoke and heat from a flue gradually discolouring the paper of a room would not entitle the assured to claim upon the insurers; but if a chimney should have caught fire, and the firemen in extinguishing it injured and displaced the slates upon the roof, or accidentally poured water into the room below, and so defaced the ceilings and walls, in such a case the insurers would undoubtedly have to make good the damage.

We shall now proceed to notice the several cases bearing upon this subject; and it will aid the reader in comprehending their full force if he will first turn to our art. CONSEQUENTIAL DAMAGES.

In the well-known case of *Austin* v. *Drew*, before the English Courts in 1815, the facts were these: The premises insured were used as a manufactory for sugar-baking. The building was divided into 7 or 8 stories. On the ground floor were pans for boiling the sugar, and a stove to heat them. From the stove a chimney or flue went to the top of the building; and as it passed each floor there was a register in it, with an aperture into the rooms, whereby more or less heat might be introduced at pleasure. The upper floors were used for drying the baked sugars. One morning, the fire being lighted as usual below, the servant whose duty it was to have opened the register in the highest story forgot to do so. The consequence was that the smoke, sparks, and heat, were completely intercepted in their progress through the flue, and were forced into the room where sugars were drying. The smoke being perceived below, an alarm was given. One or two men were suffocated in attempting to open the register; but at last it was opened, and the mischief remedied. Had it remained shut much longer, the premises would prob. have been burned down; but in point of fact there never was more fire than was necessary to carry on the manufacture; and the flame never got beyond the flue. The sugars, however, were much damaged by the smoke, and still more by the heat. The loss amounted to several thousand pounds. The question now arose whether this was a loss covered by the pol. of ins., which was against "all losses which the insured should suffer by fire:"—*Held*, not to be a loss within the pol.

Gibbs, C.J., said: I am of opinion that this action is not maintainable. There was no more fire than always exists when the manufacture is going on. Nothing was consumed by fire. The plts. loss arose from the negligent management of their machinery. The sugars were chiefly damaged by the heat; and what produced that heat? Not any fire against which this co. insures, but the fire for heating the pans, which continued all the time to burn without any excess. The servant forgot to open the register by which the smoke ought to have escaped, and the heat to have been tempered. . . . They might as well be sued for damage done to drawing-room furniture by a smoky chimney. [4 Camp. 360.]

In the case of *Dobson* v. *Sotheby*, before the English Courts in 1827, it was *held*, that where in a pol. of ins. on premises of a certain description, "where no fire is kept, and no hazardous goods are deposited," these words must be understood to refer to the *habitual* use of fire and deposit of hazardous goods. Where therefore the loss on such a pol. happened in consequence of the making a fire and bringing a tar-barrel on the premises for the purpose of repairing them, the insured was entitled to recover.

In *Johnston* v. *West of Scotland* Ins. Co., before the Scottish Courts in 1828, the facts were these: A fire happened, and the day after it was extinguished, the walls of the burnt edifice, in consequence of being weakened by the fire, *fell upon another building, crushing it in*. The pol. of the Co. held the plaintiff covered against "all loss or damage which the insured shall suffer by fire on the property above described:"—*Held*, that the insurers were liable, *although the house insured had not been on fire, and the gable of the other house had stood for 2 days after the fire was extinguished; and fell in the course of operations on it by order of the Dean of Guild, with a view of taking it down*. The Lord President said: "If the gable had fallen during the fire, could there have been a doubt that the loss thereby occasioned would have been within the pol.? I apprehend not; and if so, what difference can it make that it stood tottering for a day or two?" The Lord Ordinary in his note upon the case did not regard it as attended with much doubt. Fire must be the proximate cause of the injury received; but he was not aware of there being any case in which it had been held that, "in order to entitle the assured to their relief, it should be proved to have been the *actual instrument* by which the injury sustained was inflicted."

In the case of *Merchants and Manufacturers* Ins. Co. v. *Washington* Ins. Co., before the Courts of Ohio in 1854, the circumstances were these: The plaintiffs effected an ins. upon their stock of "flour, grain, and cooperage, contained in their stone and brick steam flouring mill, with a cement roof, known as the City Mills, detached from all other buildings;" and it was agreed that "thereafter" none of the following trades should be carried on therein, viz. "Grist, saw, paper, and other mills, manufactories, or mechanical operations requiring fire-heat, or in which wood chips or shavings are made;" and at the time of the loss "kiln-drying corn meal," requiring *fire-heat*, was carried on in the building; it was *held*, that as kiln-drying corn meal was an incident to a "steam flouring mill," the pol. was valid. [1 Handy, Ohio, 181.]

In the case of *Lewis* v. *Springfield* Fire, before the Massachusetts Courts in 1857, the facts were these: A building became undermined and fell, covering in its ruins certain chemicals which took fire, *which fire communicated with another building*, a part of which, with the goods therein, had been involved in the crash; but a part also had remained standing with the goods undisturbed. It was contended by the ins. co. that after the fall of part of the building, the goods could no longer be said to be "contained therein" within the meaning of the pol.:—*Held*, that the insurers were liable for damage from fire, and from water used to extinguish it, to goods not displaced or injured by the fall. The Court was of opinion that the goods were certainly as much contained in the building and covered by the pol. as if they had been moved out to avoid the fire, but nevertheless had been consumed. [10 Gray, Mass. 159.]

In the case of *British American* Ins. Co. v. *Joseph*, before the Canadian Courts in 1857, it was *held*, that an ins. against fire, effected upon a certain quantity of coal, covers not only the coals deposited at the time, but those deposited since; and covers also the risk arising from spontaneous combustion. [9 Lower Canada, Q.B., Appeal side, 448.]

It is clear from this case, and some others which follow, that the risk insured against must be regulated to a great extent by the nature and properties of the subject-matter ins.

In *Whitehurst* v. *Fayetteville* Mut. Ins. Co., before the U.S. Courts in 1859, it was *held*, that losses arising from *bona fide* efforts to extinguish fire, such as wetting and soiling of goods, *and losses by theft consequent upon their removal*, are fairly within the contract of ins. against fire. [6 Jones, Law N.C. 352.]

In *Caballero* v. *Home Mut.* Ins. Co., before the Louisiana Courts in 1860, it was *held*, where a fire did not occur on the premises insured, but broke out in a contiguous building, and caused an explosion of *gunpowder*, which *by the concussion of the air* injured the building insured, such injury is not covered by the pol. If, however, the explosion had been occasioned by a fire upon the premises insured, the loss occasioned by the explosion would be within the pol. [15 La. An. 217.]

In *Rathbone* v. *City* Fire Ins. Co., before the Courts of Connecticut in 1862, it was *held*, if a pol. on personal property is indorsed with an agreement for the removal of the property to another building, and for the continuance of the pol. in force as to the other property after removal, it becomes in effect a new contract between the parties, and a new risk taken by the Co. And where some elements of the new risk existed which were forbidden by the orig. pol., *but which were known to the Co. when the new risk was taken*, their existence does not affect the validity of the new ins. [31 Conn. 193.]

In *Niagara* Fire Ins. Co. v. *De Graff*, before the Michigan Courts in 1863, the facts were the following: The ins. against fire provided that the pol. should be void if the premises were used for storing or keeping therein any article included in certain classes of hazards annexed to the pol., "except as herein specially provided, or hereafter agreed to by the insurer in writing upon this pol.:"—*Held*, that where the pol. was on a stock of goods insured under the general designation of "groceries," which term included some of those hazardous articles, the ins. by this designation did not specially provide for them "in writing upon the pol." [12 Mich. 124.]

In the same case it was further *held*, that spirituous liquors illegally kept for sale may, notwithstanding, be lawfully insured against destruction by fire. *The risks insured against are not the consequences of illegal acts, but of accidents.*

In *Brady* v. *North-western* Ins. Co., before the Michigan Courts in 1863, it was *held*, that a pol. of ins. against fire covers all loss which necessarily follows from the occurrence of a fire, whenever the injury arises directly or immediately from the peril, *or necessarily from incidental and surrounding circumstances the operation and influence of which could not be avoided.* [11 Mich. 425.]

In *Mayor*, etc., of N.Y., v. *Brooklyn* F. Ins. Co., before the N.Y. Courts in 1864, it was *held*, where the property described in a pol., and the purposes to which it is dedicated, *sufficiently indicate the character and nature of the articles to be kept there, and the bus. to be transacted*, and the nature and extent of the risk must have been known to the insurers to embrace articles and pursuits specified as hazardous, extra-hazardous, and specially hazardous, the carrying on of a bus. in the building, denominated hazardous or extra-hazardous, or specified in the memorandum of special rates, without permission of the insurers, will not vitiate the pol. [41 Barb. N.Y. 231.]

In *Brown* v. *King's County* Fire Ins. Co., which was before the N.Y. Courts in 1865, the facts were these: A pol. issued to a druggist insured him against loss or damage by fire, on his stock of drugs, chemicals, and other merchandize, "hazardous and extra-hazardous:"—*Held*, that the pol. covered a fire occasioned by the insured putting upon a stove on the premises about 5 gallons of an inflammable ointment, for the purpose of warming it; it being usual for druggists to mix and melt ointments in that manner. [31 How, N.Y. 508.]

In *Sohier* v. *Norwich* F. Ins. Co., which came before the Massachusetts Courts in 1865, the facts were these: A pol. on a theatre contained a clause that the insurers should not be liable on account of any loss by a fire originating in the theatre proper; and a brick wall of the building became so heated from without as to set fire to the wood-work within the theatre:—*Held*, that this was not a fire originating in the theatre proper, within the meaning of the pol., and that the insurers were liable. [11 Allen, Mass. 336.]

In *Nave* v. *Home Mut. Fire*, before the U.S. Courts in 1866 [37 Mo. 429], the facts were as follow: The walls of a warehouse, from weakness or other cause, *not proceeding from fire, and without its agency*, fell in upon themselves, becoming with the goods contained therein one mass of ruin, out of which fire proceeded:—*Held*, (1) that a pol. of ins. upon a building is an ins. upon the building as such, and not upon the materials of which it is composed; (2) if, from any defect of construction or overloading, the building fall into ruins, and subsequently the materials take fire, the insurer is not liable for the loss. Mr. May, in his excellent *Law of Ins.* (Boston, U.S. 1873, p. 497), says upon this case: "When the fire took place, the subject insured had ceased to be, and had become a congeries of materials. The cause of the loss was the fall, and not the fire. The fire did not produce the fall, but the fall produced the fire; and the destruction was by the former. That a fire sprung up, after the fall, in the rubbish, and consumed the fallen materials, was immaterial. . . . The fire in this case was not the efficient or proximate cause of the loss."

In *Washington* Ins. Co. v. *Davison*, before the Maryland Courts in 1868, it was *held*, that an insurer taking a risk on a factory of any kind *is presumed to know the incidents and adjuncts appertaining to it.* In insuring a sulphuric acid manufactory, he is presumed to have contemplated the necessity of making nitric acid as a part of the method. And when he has the premises inspected, he has notice of all that an expert should see, and cannot set up the incapacity of his inspector. *Semble*, that he has knowledge of the incompleteness of the buildings that are in process of erection. [30 Md. 91.]

The points here involved are considered in their various aspects under Civil Commotion; Consequential Damages; Destruction of Buildings to Stop Fire; Explosions; Fire Ins., Conditions of; Fire Ins., Contract of; Fires Caused by Accident; Fires Caused by Negligence; Fires Caused Wilfully; Gas; Gunpowder; Lightning; Proximate Cause; Representations; Warranties.

FIRE Ins. Risks, Selection of.—It is but of small use for the fire underwriter or agent to be well versed in the hist. of the bus. in which he is engaged, or to comprehend in all its ramifications the legal contract by which the bus. is carried into effect, unless he shall also learn the points in practice, *the chief of which involves the knowledge of how to select risks of a profitable character for his co.*, or for the branch of it under his control. This selecting of profitable risks is not an inborn faculty; it can only be acquired by practice, combined with the most careful observation and reflection. It consists of something more than the power of saying "No," although *that* little word possesses a great saving power in cases of doubt. The skilled underwriter selects from among the risks offered to him *only such as he thinks will pay.* But he keeps well in his mind the theory of averages. One or two large lines upon very good risks may jeopardize the whole account. He must have, therefore, always mentally before him, the precise nature of the account he is writing, *taken as a whole.* Just as his judgment is brought to bear successfully upon the entire range of his risks, so will be the success of his account *in the end.* This is an admitted axiom in marine underwriting. It should be just as much so in regard to fire.

An agent indeed may not be put in this position of responsibility. He may be called upon simply to obey instructions regarding classes of risks and limits; but it may aid him in the intelligent performance of his duty to know that in obeying instructions he is aiding the carrying into effect the well-considered plans of his chief. And this, too, he must know, *that one ill-selected risk in any class will almost certainly destroy the profit on that class for the current year.* The selection of fire risks, then, calls for the exercise of continuous good judgment.

The *Ins. Agent* for Oct. 1875, had one of its characteristically able art. entitled, "One Bad Risk, or *Burning the Profits*," from which we draw the following passage:

> By a bad risk we do not mean simply a special risk. The theory of F. Ins. is based on a prob., greater or less, that the individual risk will *not be burnt.* By a bad risk we mean one where, taking all circumstances into account, there *is every prob. it will be burnt.* . . .
>
> Let the fire agent remember that one bad risk may entirely swallow up all the proceeds of a large and otherwise flourishing agency. It is something more than vexatious to see, for instance, a whole year's prems. swept away by a loss of £1000 on a risk which it was injudicious to take. "It is only one amongst many," is not an apology for a questionable risk tenable in F. Ins. bus. The antique simile of the fly in ointment causing the destruction of the whole, is a fair illustration of *one bad risk.*
>
> If a risk is bad, there is usually the greater desire to get it insured somehow; and some sections of the public are not scrupulously particular as to how they get fire pol. so long as they get them. . . . No one can reasonably doubt that every F. ins. is one of the causes of numerous fires.
>
> Let the agent try to avoid this *one bad risk;* this *bête noire.* It is a legitimate saying, that everything can be insured at a price; but then in some instances the prob. of the fire following the ins. is so great that the price—in other words the prem.—ought to be very nearly the same as the amount insured. We may set it down as a F. Ins. axiom, that it is better to ins. gunpowder than the goods of a man of bad character.

Much more might be written upon this subject. Is it worth while? A word to the *wise* is enough. As to the others, they had better not engage in the bus. of Fire Underwriting!

FIRE Ins. Risks, Selection against the Office In.—In Life Ins. the principle involved in "selection against the office" is very well understood; although very difficult of proof. It may be inferred that there has been a selection against the office when it is found that the mort. resulting from insured lives is greater than that of the general pop. at like ages and during a like period. The fact of uninsured *female* life being better than male life, while insured female life is worse than that of males, is a still stronger point in reasoning upon the subject. *We know then that a selection against the office is practised;* but how much is due to design and how much to other causes cannot be entirely determined.

In regard to Fire Ins. such means of comparison do not exist. No register is kept of the longevity of houses or other buildings; and as to their contents, it would be impossible. We have, therefore, no *data* on which even to found an argument as between insured and uninsured houses in regard to their liability to destruction by fire; but we have the powers of observation of those engaged in the bus. to guide us.

Mr. S. J. Fletcher, the late Sec. of the *Sun* Fire, in his evidence before the Select Parl. Committee on Fire Protection, 1867, said, "I am satisfied that the number of fires in insured property is far greater than in uninsured property" (1456). Again, "I think it extremely likely that a person who has a property not very subject to loss by fire will try to save the expense of insuring it" (1553).

The *Royal* Ins. Co. some years since kept a register of fires happening to risks *which it had declined.* We have not the continuous records at hands. We take the following passage from the Rep. on the Co.'s bus. for 1867 :

> The shareholders will be gratified to learn that the amounts of loss by fire distinctly traced to have been escaped by risks declined by this office since the last year's meeting reached the large sum of £72,811. This, be it remembered, is in addition to an amount of £40,000 announced at that time to have been saved in like manner. This large amount may, however, be considered exceptional in some respects, as it is not probable that the most diligent scrutiny will suffice at all times to discover more than a moderate per-centage of the amount of declined risks ultimately resulting in fires.

We think this is a subject that might be pursued.

FIRE INS., SALVAGE IN.—Upon the adjustment of a loss under a fire ins. pol., one of the questions to be decided, when there is any salvage—as there generally is—is, to whom does it belong. "It will be remembered," says Mr. Bunyon, "that, when the pol., as is usually the case [in the U. K.], contains no condition of average, the assured is entitled to recover in case of fire for any damage up to the amount insured, without reference to any proportion between the sum assured and the value of the pol. When, therefore, the owner is insufficiently insured upon an ordinary pol., and the ins. money, together with the value of the salvage, does not make up more than the value of the property immediately before the fire, the salvage will always belong to him. *When the owner is insured up to the full value, and the claim is admitted as a total loss, any salvage belongs to the insurers.*" He continues : "When conditions of *average* are added, the assured can only recover such proportion of the loss as the sum insured shall bear to the whole value of the property immediately before the fire. *If the property is fully insured, these conditions are inoperative ;* but if this is not the case, the assured, in the settlement, takes the position of an insurer for the proportion uncovered by the pol., *and is entitled to share in the salvage precisely as if, instead of being the assured, he had been an underwriter for an amount equal to the uninsured proportion.* The expenses for putting out the fire are, as we have seen, provided for by the conditions, and form a separate and distinct item, involving a liability in add. to the risk of paying the sum assured ; *but if any expenses have been incurred in preserving the salvage; these will fall primarily upon the salvage, and must be borne by the persons benefiting by it, in proportion to their respective interests.*"

1748.—During this year was decided in the English Courts the case of *Randal* v. *Cochran* (hereafter cited), wherein it was laid down as a principle, that the insurer after satisfaction stands in the place of the insured as to the goods, salvage, and restitution in proportion to what he has paid. This case arose under a marine pol., but it has been assumed by most writers on fire ins. that it applies equally to it.

1794.—In the pol. of *The Mut. Assu. So. of Virginia* for the Ins. of Buildings, founded this year, but which only insured to the extent of *four-fifths* of the value of the property as assessed by the officers of the Asso., there was contained the following : "But what may be saved of any building hereby insured is to be valued, and the amount shall be divided between the insured and the So., according to the sum insured, and the sum on which the said . . . runs the risk himself."

1849.—A remarkable instance of the value of salvage occurred in the case of the fire at the wool warehouse of Messrs. Gooch & Cousins, London Wall, this year, the details of which have been set out under FIRE INS., HIST. OF, at this date.

1860.—In the case of *Oldfield* v. *Price*, before the Brit. Common Law Courts this year, it was intimated by Cockburn, C.J., that an action may be maintained by a person insured against the insurer for taking and keeping possession, for an unreasonable time, of his premises and *the salvage*, after a fire. [2 F. & F. 20.]

1861.—A very remarkable case regarding salvage arose out of the great fire in Tooley Street this year. A quantity of tallow, *the property of various persons*, was melted by the fire and flowed through the sewers into the river. When floating down the Thames, cooled by contact with the water, it was collected in large quantities by unauthorized persons. A dealer who bought largely of this unauthorized salvage, and who it was presumed was fully acquainted with all the circumstances of the case, which had become notorious through the medium of the newspapers, was taken into custody charged with unlawful possession of the tallow, which was also seized. The case against the man was dismissed by the magistrate ; but the tallow was ordered to be retained under the provisions of the Police Regulation Act, 2 & 3 Vict. c. 71, s. 29. The tallow became a nuisance, and was sold by direction of the Commissioners of Police before 12 months, the time appointed by sec. 30 of the Act ; whereupon there arose in the Queen's Bench the case of *Buckley* v. *Gross*. The plaintiff in this action was the defendant in the former proceedings. He now brought an action against the purchaser of the tallow from the Police, for the value of the same, contending that the property having been abandoned by the owners was vested in the finder, in whom the property had now become reinvested by the unlawful sale. The Court held otherwise, considering that there was no evidence that the tallow had been abandoned, and inclining to think that the possession by the plaintiff had been felonious; that as regards the orig. owners, the legal effect of the mixture of the tallow was prob. to make them tenants in common in equal portions of the mass; also that, without resorting to the Police Acts at all, the constable was justified in seizing the tallow, and that thereupon the possession of the police was that of the true owners.

During this year also the case of *Skipper* v. *Grant* was before the Brit. Common Law Courts. The facts were as follow: A person effected 3 pol. on goods—one for £6000 with A. co.; another for £2500 with B. co.; and a third for £2500 with C. co. A fire having happened, his claims against the cos. were referred to arbitration. The agreement of reference recited that the insured claimed to have made good by the cos., or some of them, the loss thereby sustained to the chattels and things insured, so far as the loss was covered by the pol., or any of them; and that four schedules, severally marked A. B. C. and Ca., contained the particulars of all the chattels and things alleged by him to have been covered by the pol., or some or one of them, and to have been destroyed or injured by fire. It further recited that "it had been agreed between the parties that the claim, so far as respected the chattels and things particularized in schedule A., should be satisfied by means of the payment to him of £2771 19*s.* 5*d.*—such sum being the agreed value at the time of the occurrence of the fire of the last-mentioned chattels and things, as the assured did thereby admit." It further recited that difficulties had arisen respecting the settlement of the claim, so far as the same had not been agreed to be satisfied, and respecting the adjustment of the liabilities of the cos. as between or among themselves, to the total loss covered by the pol. It then proceeded to refer it to arbitrators, "to award and determine what was the total sum of money which ought to be paid under or by virtue of the pol., or any of them, in respect of loss or damage occasioned by the fire to or in the chattels or things particularized in schedules B. C. and Ca., and what were the several proportions in which such total sum, and also £2771 19*s.* 5*d.* agreed to be paid, ought to be borne and paid among or between the several cos." The arbitrators found that £8228 0*s.* 7*d.* was the total sum of money which ought to be paid to the insured under or by virtue of the 3 pol. in respect of the loss or damage occasioned by the fire to the chattels and things particularized in schedules B. C. and Ca.; and they directed that this sum of £8228 0*s.* 7*d.* and the £2771 19*s.* 5*d.* so agreed to be paid to the insured in satisfaction of his claim in respect of the loss or damage occasioned by the fire to the chattels, and things particularized in schedule A., making together £11,000, should be borne and paid by the 3 cos. in certain proportions. They then found that the loss or damage sustained exceeded the sums insured, and *that the whole salvage and proceeds of the salvage of and from the fire belonged wholly to the insured*:—*Held*, that in awarding that the insured was entitled to the salvage, which it appeared from the record arose solely from the goods particularized in schedule A., *the arbitrators had exceeded their jurisdiction.* [10 C.B. N.S. 237.]

When, as sometimes happens, the insurers pay to the assured the full value of a parcel of goods which have been damaged, leaving the property in the hands of an auctioneer to dispose of, in such a case, and whenever the insured receives the full value of his property, and his claim is so discharged, the salvage, as we have seen, belongs to the insurers; and should it eventually, upon a rise in the markets, fetch more money than they have paid to the insured, they will be entitled to retain the whole as purchasers of the goods. Such cases have, it is understood, actually occurred in practice.—Bunyon, *Law of Fire Ins.*

The custom regarding salvage in the U.S. differs in some respects from that in the U.K. Under average pol. there the underwriters *do not parti. in the salvage*; but in cases of total loss—under full ins.—the salvage reverts to the underwriters as in the U.K.; while under partial loss the salvage also belongs to the insured, as with us. Expenses incurred in saving property become a portion of the loss, and are borne by the insurers *within the amount of the pol.*; with us they go beyond the sum insured. All expenses for the care of salvage *after the fire* fall upon the owner of the salvage, as with us.

There is another aspect of the salvage question; and that is in relation to the liability of goods to be destroyed by fire, water, smoke, steam, damp, mould, removal, etc. This is generally taken into account in classing the goods, and so enters into the rate of prem. to be paid for the ins.

In view of the efficient protection of salvage at fires, Salvage Brigades have been estab. in Liverpool, Manchester, Glasgow, London, etc. These will be spoken of in their alphabetical places. [Fire Ins. Office Combinations.]

FIRE Ins. on Ships.—Marine ins. pol. cover the risk of fire—other than that arising from spontaneous combustion of cargo; but inasmuch as marine pol. are not usually in force while ships are in dock, lading and unlading; nor while ships are building, or are under repair; it is usual to insure them against the risk of fire in all such last-mentioned cases. The subject will be considered under Ships, Ins of, against Fire Risk. [Fires on Board Ships.]

FIRE Ins. Surveyors.—These are officials whose duty it is to examine with care all houses and buildings offered for ins., or containing goods offered for ins. Upon the results of their examination and report, the rate of prem. has to be determined. So again, in regard to alterations of premises, it is part of the bus. of the surveyor to see to these, and if the risk be increased in any manner by reason of such alteration, to name an adequate increase of prem.

That the practice of surveying risks was adopted soon after the bus. became popular, is seen in the charges made for survey in some of the earlier cos. [Fire Ins., Practice of.]

1818.—It formed one of the grounds of complaint against the management of the *Norwich Union* Fire, that in the earlier part of this century no regular surveyor held an appointment on the staff. The Committee which reported upon the affairs of this co. at this date say:

> There does not appear to have been any permanent surveyor. The Committee consider this an evil of considerable magnitude, and have no doubt that great detriment will frequently arise to a fire inst., if there are no means of obtaining authenticated reports on subjects to which the attention of surveyors is usually directed.

For the last half century prob. few offices have had more attention paid to this department than this particular co.

1832.—Mr. F. G. Smith, formerly Surveyor for the *Scottish Union*, in his *Practical Remarks*, etc., pub. this year, says:

> There are many qualifications indispensable in the surveyor of a fire ins. co. to render him truly efficient and valuable to the estab. Practical experience of every branch of the bus. is one essential point. Theoretical knowledge will not qualify a person to take a responsible part in the conduct or man. of almost any bus., much less that of ins.; . . . much depends upon the discriminating judgment of the surveyor in recommending the accepting or declining of certain ins., as well as in making surveys or inspections of special risks, *so as to obtain such divisions as would be of advantage to the co. in the event of fire*; and also in obtaining as adequate a prem. for the risk as the existing competition admits of.

In the U.S. quite a series of books have been pub. of late years in view of aiding F. ins. surveyors in the performance of their duties. These have been mentioned under their dates of pub. in Fire Ins., Practice of; and Fire Ins. Prems.

1872.—Captain Shaw, Chief of the Metropolitan Fire Brigade, pub.: *Fire Surveys; or, a Summary of the Principles to be observed in estimating the Risk of Buildings.* His object, he says, is to lay down correct and truly economical principles, and to make owners of property more or less aware of the actual points of safety or danger. He discusses the matter under the heads of site, foundation, area, height, shape, cubical capacity, external walls, roofs, internal divisions, chimneys, staircases and stairs, flooring, number and size of separate risks, nature, quantity, and classification of stock, classification of trades, accessibility, bus. carried on, heating, lighting, special risks, surrounding and external risks, watching, water supply, fire engines, hose, and other appliances, external means of protection, etc. This little work should be in the hands of every F. ins. surveyor, as also of every architect, builder, and theatrical manager.

Fire ins. surveyors not unfrequently combine with those duties, or ripen into, the equally important position of Assessors of Fire Losses.

FIRE Ins. Tariffs.—See Fire Ins. Office Combinations; Fire Ins. Prems.

FIRE Ins., Valued Pol. in.—See Fire Ins. Practice, under date 1744; also Valued Policies.

FIRE Ladders.—Under title Fire Escapes we have noticed certain appliances intended to answer the double purpose of affording an escape for the inmates of buildings on fire, and also of being used by the brigades for the purposes of fire extinction. We propose here to speak of ladders designed for the latter purpose only.

1189.—Reign of Richard I., the Wardmotes of the City arranged rules for preventing loss of life by fire, amongst which was the following: "*Item*—that all persons who dwell in great houses within the ward have a ladder or two ready and prepared to succour their neighbours in case misadventure should occur from fire."

1667.—An Act of Common Council passed this year provided for a large supply of ladders to the City, as will be set forth in detail under Fire Protection. (*Item* II.)

1830.—Mr. Braidwood, in his *Fire Engines and Apparatus, etc.*, pub. this year, dwelt upon the importance of the firemen having ladders readily available. He had a supply of 8 ft. and of 14 ft. ladders which always accompanied the fire engines. He also had for the Edinburgh Fire Brigade a chain ladder 80 ft. long.

1869.—In the U.S., where mechanical invention is always active, and where the prevalence of shingle roofs—liable themselves to take fire readily in hot weather—renders necessary some means of getting a supply of water on a level with the roof rapidly, attention has been long directed to this subject. During this year Watson and Perry's Fire Ladder was perfected. It forms in combination a fire ladder, fire escape, hose supporter, and hose reel; these all constituting parts of the engine tender, which always accompanies or precedes the fire engines at conflagrations in the U.S. The ladder is raised by means of a winch, and supports itself without contact with the building, and is high enough to command the roof of many of the tallest buildings in N.Y. It also has side-ladders, available, while lending support to the main ladder, for the purpose of firemen working at the lower stories. We believe this ladder is used by many fire brigades with success.

1874.—Capt. Shaw, in his Ann. Report to the Metropolitan Board of Works, recommended the formation of ladder brigades for the conveyance of long ladders to the scene of fires. He alluded to the utter impossibility of the fire brigade carrying about a stock of ladders really sufficient for heavy fires, and the great advantage which would arise from the formation of private ladder companies by the numerous energetic persons who turned up at all fires and offered assistance, but whose services could scarcely ever be availed of by the brigade, chiefly in consequence of their want of skill, and often, in addition to that, because of their assuming a costume so closely resembling that of the brigade as to deceive the police and the public, and sometimes in the smoke of a fire even the officers and men of the brigade. He was strongly of opinion that if those persons were to organize themselves into ladder companies, and provide themselves with trucks carrying common builders' ladders of lengths varying from 12 to 60 or 70 ft., and with serviceable uniforms wholly distinct from those of the Fire Brigade and Salvage Corps, especially in the helmets, which were the most prominent part of the costume, they could do much good service in the saving of life and property, and he would most gladly give them every assistance in the organization and training necessary for that desirable end.

During this year there was perfected in N.Y. the "Skinner Hook and Ladder Truck and Fire Escape Combined." It could be raised rapidly to a great height, being worked by two men. It was self-supporting, but could be easily made to rest against the building, if desired. The cost ranges from 1000 to 2800 dol.

Prof. Tachelli was building in Boston, U.S., a "Fire Monitor," to be used as a fire ladder, hose elevator, etc., and capable of being raised 100 ft. in two minutes.

1875.—Mrs. Scott Uda designed an "Aerial Fire Ladder" on the telescopic principle, which was purchased by the New York Fire Department, but which, when put on trial on the 14th August this year in N.Y., collapsed, causing the death of three firemen.

A later development is that of fireproof shutters, with iron bars, so contrived as to make a continuous ladder from the ground to the roof. But we doubt if these can ever supply the place of properly constructed fire ladders. [Fire Escapes.] [Fire, Preservation of Life from.] [Fireproof Shutters.] [Ladder Brigades.]

FIRE Loss Apportionments.—See Apportionments of Fire Losses.

FIRE, Loss of Life by.—See Fires, Deaths Caused By. [Fire, Preservation of Life From.]

FIRE Losses.—We have already dealt with the subject of Fire Losses from an ins. point of view; but the destruction of property by fire has other aspects. All property so destroyed represents a diminution of the National Wealth. In this sense we shall speak of it, and give some estimates under Fires and Fire Ins., Statistics of.

FIRE Marshal.—An officer appointed in many of the larger cities of the U.S., whose duty it is to inquire into *the Causes of Fires* happening in the district under his charge. When he deems the circumstances to be sufficiently surrounded with suspicion, he puts the police and municipal authorities in communication; and furnishes these with copies of his rep. and other information. [Fire Inquests.]

FIREMEN.—Men who are trained to the pursuit of extinguishing fires. That men so trained existed in ancient Rome at an early period we have shown under title Fire Brigades, as also under Fire Extinguishment. In confirmation, some gentlemen, who had at the close of 1866 obtained permission to open excavations in the Trastevere quarter of Rome, discovered, at a depth of eight or ten metres, a mosaic in white and black, surrounded with ruined walls, and representing tritons, nymphs, and fishes. From investigations of, and further discoveries made by, M. Visconti, Professor of Archæology and Ancient History at the Roman University, it appears the remains are those of a barrack of the 7th cohort of firemen of ancient Rome. The firemen were designated *Matricularii.*

We have no exact knowledge of when firemen were first appointed in Gt. Brit. From the circumstances stated in the early portion of the art. Fire Brigades, it is possible they existed at an early period in Lond.

The F. ins. offices founded at the close of the 17th and commencement of the 18th century, employed companies of firemen, who were then designated "*Watermen,*" either from the fact of their carrying water to supply the engines at fires; or not improbably because, when not engaged at fires, they plied their calling as watermen on the river.

1707.—The Act 6 Anne, c. 58, passed this year, makes special reference to "Watermen," and, in consideration of their services at fires, exempts them from impressment, at that time so general.

In process of time these watermen became known as "*Firemen.*" It may be mentioned as a curious fact that to the present time sailors are generally selected to act as firemen in Lond.

1716.—Geo. I. having left his son, the Prince of Wales [afterwards Geo. II.], guardian of his kingdom during a visit to Hanover, the Prince turned fireman, and assisted in extinguishing a fire which broke out in the French Chapel in Spring Gardens on 2 Dec. this year; and was prob. present at another two days later, at Nightingale Lane, Limehouse. He contributed £1000 to the sufferers. It was in honour of these acts that Rowe, the new Poet Laureate, who had recently been appointed Clerk of the Prince's Council, wrote the following epigram :

Thy Guardian, blest Britannia, scorns to sleep
When the sad subjects of his father weep ;
Weak princes by their fears increase distress—
He faces danger, and so makes it less.
Tyrants on blazing towers may smile with joy :
He knows to save is greater than destroy.

—*Vide* Edward Solly, F.R.S., in *Notes and Queries*, ser. 5, vol. iii. p. 446, title "Royal Firemen." These instances, coupled with another, under date 1733, go to show that the passion of the present Prince of Wales to attend fires may be hereditary.

1733.—The Prince of Wales—Frederick Lewis, son of Geo. II.—attended a fire which occurred at Berkeley House, Piccadilly, and performed the duties of a fireman. (See 1716.)

1812.—The *Rejected Addresses* of the brothers James and Horace Smith, pub. this year, and quoted by us under FIRE BRIGADES, gave to the firemen a place in English classic literature.

1830.—Mr. James Braidwood, then Master of the Fire Engines in Edin., pub. his work—the earliest of its kind—*On the Construction of F. Engines and Apparatus, the Training of Firemen, and the Method of Proceeding in Case of Fire*, wherein he says :

Slaters make good firemen, not so much from their superiority in climbing, going along roofs, etc. —although these are great advantages—but from their being in general possessed of a handiness and readiness which I have not been able to discover in the same degree amongst other classes of workmen. It is perhaps not necessary that I should account for this, but it appears to me to arise from their being more dependent on their wits, and more frequently put to their shifts in the execution of their ordinary avocations. House carpenters and masons being well acquainted with the construction of buildings, and understanding readily from whence danger is to be apprehended, can judge with tolerable accuracy, from the appearance of a house, where the stair is situated, and how the house is divided inside. Plumbers are also well accustomed to climbing and going along the roofs of houses ; they are useful in working firecocks, covering the eyes of drains with lead, and generally in the management of water. Smiths are serviceable in any little matters of repair which may be necessary about the engine or apparatus while at work. Smiths and plumbers can also better endure heat and smoke than most other workmen.

He had found men selected from these five trades to be more robust in body, and better able to endure the extremes of heat, cold, wet, and fatigue, to which firemen are so frequently exposed, than men engaged in more sedentary employments. He adds :

I have generally made it a point to select for firemen young men from 17 or 18 to 25 years of age. At that age they enter more readily into the spirit of the business, and are much more easily trained, than when further advanced in life. You will frequently find men who, although they excel in the mechanical parts of their own professions, are yet so devoid of judgment and resources, that when anything occurs which they have not been taught, or have not been able to foresee, they are completely at a loss. Now, it happens not unfrequently that the man who arrives first at a fire, notwithstanding any training or instructions he may have received, is still, from the circumstances of the case, left almost entirely to the direction of his own judgment. It is, therefore, of immense importance to procure men on whose coolness and judgment you can depend. If they are expert tradesmen, so much the better, as there is generally a degree of respect shown to first-rate tradesmen by their fellows, which inferior hands can seldom obtain ; and this respect tends greatly to keep up the character of the corps to which they belong, and which ought never to be lost sight of.

He had his men trained in gymnastic exercises, and says thereon :

Amongst the many advantages arising from these exercises, I shall notice only one or two. The firemen, when at their ordinary employments, as masons, house carpenters, etc., being accustomed to a particular exercise of certain muscles only, there is very often a degree of stiffness in their general movements, which prevents them from performing their duty as firemen with that ease and celerity which are so necessary and desirable ; but the gymnastic exercises, by bringing all the muscles of the body into action, and by aiding the more general development of the frame, tend greatly to remove or overcome this awkwardness. *But its greatest advantage is the confidence it gives to the men when placed in certain situations of danger.* A man, for example, in the third or fourth floor of a house on fire, who is uncertain as to means of escape, in the event of his return by the stair being cut off, will not render any very efficient service in extinguishing the fire ; his own safety will be the principal object of his attention, and till that is to a certain extent secured, his exertions are not much to be relied upon. An experienced gymnast, on the other hand, placed in these circumstances, finds himself in comparative security. With a hatchet and 80 ft. of cord at his command, and a window near him, he knows that there is not much difficulty in getting to the street, and this confidence not only enables him to go on with his duty with more spirit, but his attention not being abstracted by thoughts of personal danger, he is able to direct it wholly to the circumstances of the fire. He can raise himself on a window-sole, or the top of a wall, if he can only reach it with his hands ; and by his hands alone he may sustain himself in situations where other means of support are unattainable, till the arrival of assistance. These are great advantages ; but, as I said before, the greatest of all is that feeling of safety with which it enables a fireman to proceed with his operations, uncertainty or distraction being the greatest of possible evils. The cord carried at the waist-belt of the captains, sergeants, and pioneers, being fully sufficient to sustain a man's weight, and with the assistance of their small hatchets easily made fast, and the pioneers always being two together, there is thus no difficulty in descending even from a height of 80 ft. ; the cords should be doubled by way of security.

1856.—Mr. Braidwood, then Chief of the London Fire Brigade, said, in his paper on "Fires," read before the So. of Arts, speaking of those under him :

The firemen are drilled first daily, and then two or three times a week, for some months ; and this with an average of three "calls" a day soon makes them acquainted with the routine of the business ; *but it takes years of constant work to make a thorough fireman. . . .*

The firemen in Lond. being constantly employed on weekly wages, give their whole time to their employers, and are much more under command than where men are only occasionally employed. The wages and treatment being liberal, although the discipline is severe, there are generally a considerable number of candidates for each vacancy. Thus good men are obtained, seamen being preferred, as they are taught to obey orders; and the night and day watches, and the uncertainty of the occupation, are more similar to their former habits than to those of other men of the same rank in life. The large number of fires, is, however, the principal cause of any advantage the Lond. firemen may possess over those of smaller places; and it is hardly fair to compare firemen who have only an opportunity of attending one or two fires in a week with those who attend nearly three fires a day.

1860.—There was pub. in N.Y., by Geo. P. Little: *The Firemen's Own Book, containing Accounts of Fires throughout the U.S., as well as other Countries; Remarkable Escapes from the Devouring Element; Heroic Conduct of Firemen in Cases of Danger; Means of Extinguishing Fires; Accounts of Firemen who have lost their Lives while on Duty; together with Incidents and Suggestions, Interesting and Valuable to Firemen and Citizens Generally. Ornamented with numerous engravings.* A work possessed of considerable interest. It was mainly addressed to Volunteer Firemen, then so general throughout the U.S. These have now almost entirely passed away, in favour of paid, well-organized brigades.

It was in recollection of the "Old Volunteer Period," that Dr. Bombaugh, Editor of the *Baltimore Underwriter*, at the close of the Third Ann. Convention of the Chiefs of the Fire Departments of the U.S. held in N.Y. Sept. 1875, inspired his metrical effusion, from which we can but reproduce the following cantos:

The fireman roused, perhaps at dead of night,
Hurried half-dressed to scenes of wild affright,
'Twixt cold at zero and the furnace glare
Of fierce flames roaring in the icy air,
And fought the fire-fiend till the toppling wall
Buried the martyr in its crushing fall.

Who can forget how, when the nation's life
Was all outpoured in fratricidal strife,
He proved himself the bravest of the brave?—
Ready to give, his life he freely gave;
And whether wearing butternut or blue,
Each to his flag and his convictions true.

This reference to the brave services of the firemen during the war is not only graceful, but true.

1861.—The Great Fire in Tooley Street, which broke out 22nd June this year, caused the death of poor Braidwood, who was the chief, as he was the last of the firemen of the old school. He had a public funeral, and was buried in Abney Park Cemetery. The managers of all the leading fire offices, the Duke of Sutherland, and others followed.

Capt. Shaw, who is a model fireman of the new school, was appointed Braidwood's successor, and is still the Chief of the Metropolitan Fire Brigade—a most active and zealous officer.

1875.—On the 30th July, this year, a public funeral was accorded to the remains of the senior member of the Metropolitan Fire Brigade, Engineer Paul Girard, after a service as a London fireman of nearly 43 years. For the last 16 years he had been the officer-in-charge of Chandos Street Station. The funeral was performed at Brompton Cemetery. The Fire Brigade, 165 strong, in full uniform, with helmets and axes, headed by Captain Shaw and the four district superintendents, Messrs. Bridges, Gatehouse, Hamlyn, and Palmer, and with six of their manual engines, marched in procession from Chandos Street to the Cemetery. The coffin, upon which were laid Girard's helmet and uniform, was carried on the Chandos Street engine. The procession, which was of great length, also included the A Division of Police, 200 in number, the officers and men of the London Salvage Corps, a numerous staff of turncocks, and several volunteer fire brigades with their engines. Colonel St. Martin, the head of the Sapeurs Pompiers of Paris, who was on a visit to this country, was also present. A police band played a series of funeral marches on the way to the Cemetery. The procession caused much public interest all along the line of route.

During this year also Engineer Maidman died, after a service of 40 years in the Lond. Brigade.

FIREMEN'S DOG, THE.—Regarding this famous dog, of which so many stories have been told, the following "statement of facts" from the *Quarterly Review*, Dec. 1854, appears worthy of being preserved:

> The fascination of fires even extends to the brute creation. Who has not heard of the dog "Chance," who first formed his acquaintance with the Brigade by following a fireman from a conflagration in Shoreditch to the central station in Watling Street? Here, after he had been petted for some time by the men, his master came for him and took him home; but he escaped on the first opportunity, and returned to the station. After he had been carried back for the third time, his master—like a mother, whose son *will* go to sea—allowed him to have his own way, and for years he invariably accompanied the engine, now upon the machine, now under the horses' legs, and always when going up-hill, running in advance, and announcing the welcome advent of the extinguisher by his bark. At the fire he used to amuse himself with pulling burning logs of wood out of the flames with his mouth. Although he had his legs broken half a dozen times, he remained faithful to his pursuit; till at last, having received a severer hurt than usual, he was being nursed by the firemen beside the hearth, when a "call" came, and at the well-known sound of the engine turning out, the poor brute made a last effort to climb upon it, and fell back dead in the attempt. He was stuffed and preserved at the station, and was doomed, even in death, to prove the fireman's friend: for one of the engineers having committed suicide, the brigade determined to raffle him for the benefit of the widow, and such was his renown that he realized £123 10*s*. 9*d*.

FIREMEN'S DRESS.—The invention of a suitable dress for firemen to wear in the performance of their duties speedily became a matter of importance. It will be considered under FIREPROOF DRESS.

FIREMEN'S HELMETS.—These are constructed in view of protecting the head from injury by falling materials. Several attempts have been made, with more or less success, to add to these an entire covering for the face, with respirators. See FIREMEN'S RESPIRATORS.

FIREMEN'S RESPIRATORS.—The importance of discovering some simple means of aiding the respiration of Firemen during the performance of their duties, amid smoke and other destructive vapours, has long been felt. We propose briefly to notice the results.

1823.—Charles Anthony Deane patented his smoke and diving apparatus, which was constantly used by the London Firemen, with most satisfactory results. By his arrangement for pumping a fresh supply of air into a helmet, they could remain "for any time" in the most smoky atmosphere without the least trouble, provided they were not incommoded by the heat, against the effects of which they had nothing provided. The Paris Corps of Sapeurs Pompiers are stated still to use this appliance. (See 1825.)

1824.—John Roberts, a miner, invented a "smoke respirator," or hood, by means of which a fireman could enter a burning building or room, however full of smoke it might be, without danger. The Society of Arts awarded him 50 guineas and a medal; the *Manchester Guardian* gave him a similar sum, and King George IV. presented him with 100 guineas. It was most efficient.

1861.—Mr. R. Bradbrooke invented his smoke and noxious vapour respirator, by means of which it was stated a person could enter a building, however dense the smoke or vapour might be, without injury. Many experiments were made to test the efficiency of this invention; and they were attended with satisfactory results. The Royal So. for the Protection of Life from Fire equipped the conductors of their escapes with them. It was also adopted by several foreign governments.

1867.—It was given in evidence before the Select Parl. Committee on Fire Protection which sat this year, that while the fire escape men were provided with patent respirators to guard against suffocation, they seldom if ever wore them. The Sec. said the respirator required too much forethought and care to adjust it, and that the men "prefer relying on their own resources and taking their chance of the danger of suffocation to losing a single moment in adjusting the respirator" (2397). One man at the Whitechapel Station had saved 150 lives in 15 years, and had hardly ever worn the respirator! (2401). The case of firemen, however, who sometimes are called upon to work in the presence of dense smoke for hours together, is very different.

1871.—There was invented by Prof. Tyndall a new respirator for firemen: in which the solid particles of the densest smoke are arrested by films of cotton-wool wetted with glycerine, and the most pungent gas by layers of charcoal. By means of this contrivance firemen can remain within burning buildings for upwards of half an hour at a time with safety and comfort so far as their respiration is concerned.

At the Brit. Asso. Meeting in Edinburgh this year, Mr. Wm. Ladd, F.R.A.S., gave an account of this invention.—*Trans.* pt. ii. p. 44.

1873.—The last-named respirator was fitted on to the helmets so as to be ready for instantaneous use.

1875.—Capt. Shaw, Chief Officer of the Metropolitan Fire Brigade, read before the So. of Arts in Jan. this year a paper: *Appliances for Enabling Persons to Breathe in Dense Smoke or Poisonous Vapours;* wherein the various contrivances in this direction were passed in review, and criticized with an ability alone to be obtained from practical experience. He says:

> To enable a man to enter into and remain in a place strongly impregnated with mephitic or noxious gases, two courses are open. One, to supply him with pure air from an external source; the other, to provide him with the means of filtering for himself such air as he finds, admitting to his lungs only that which is pure and useful, and rejecting the rest.

The chief aim of late has been in the direction of the latter.

Experiments were made at Westminster with Barton's Patent, as recommended by Prof. Huxley. Men were enabled to breathe and work freely in an atmosphere which would rapidly stifle any one without such protection.

Early this year the "Denayrouze Respirator," which is intended to apply to the entering and remaining in foul air in other cases than that of fire, was tried at the works of the Phœnix Gas Co. in Kennington Lane. The respirator consists of a small tin case or regulator containing the inhaling and exhaling valves, and which is slung at the back of the operator. From the top of the regulator a tube, having a mouthpiece, passes over the operator's shoulder to his mouth, while to the bottom a tube of any desired length is attached, the outer end of which always remains in the atmosphere, The operator also wears a mask, which has an elastic nose clip and lining, and is fitted with glass-covered sight-holes, so that noxious gases can neither affect the eyes nor obtain entrance to the lungs through the nose.

In July, the Committee of the Metropolitan Board of Works brought up a report wherein it was recommended that add. means be taken to preserve life from fire; and it was thought this might best be accomplished by providing the men in charge of the fire escapes with this invention; accordingly 120 sets were ordered, at £2 16*s.* each.

In the U.S. the "McIntyre Respirator" is in use. The "mask" employed consists of woollen cloth saturated with chemicals, and having two thin plates of mica for the eyes. A smoke filter which is attached consists of a tin cylinder with perforated cap inserted in a woollen sack secured by buckles. The cylinder is filled with cotton waste saturated with oil, and will absorb twenty times its own bulk of poisonous gases. The fireman inhales through the mouth and exhales through the nostrils. The invention dates from Chicago, and seems but a simplification of some of those already named. [FIREPROOF DRESSES.]

FIREMEN'S SHIELD.—A fire shield has been invented by Captain Elijah Low, long the chief engineer of the Bangor (Me.) Department, intended to meet a want felt by firemen in preventing the fire from leaping across the street or on to adjoining buildings. This shield gives the firemen command of both sides of the street, and while they can approach at working distance the hottest fire, they can wash down the opposite side of the street, or any adjoining buildings which could not be approached in any other way. The device is light and portable—two men can easily handle it—and about 54 inches in width by six and one-half feet in height, with a projecting curve at the top, the whole being of galvanized iron. Near and on a level with the eye in the centre is an orifice some eight inches in diameter, which can be wholly closed or opened sufficiently for the introduction of the nozzle of the hose when playing. The patent also includes the insertion of a small window of mica, through which the hoseman can watch the action of the flames while fighting the hottest fire in safety.—*Baltimore Underwriter*, Feb. 1875.

FIREMEN'S TORCH.—A Norwich (U.S.) fireman has invented a torch and bar for firemen's use, which can be used at one end for a torch and at the other for a prizing bar. 1874.

FIRE MONITOR.—Prof. Tachelli was building at Boston, U.S., in 1874, what he called a "Fire Monitor," designed to be a hose elevator for firemen. The machine, when finished, is to consist of a cluster of seven ladders, reaching a height of 60 feet, with a fly ladder to go up 30 feet more. The apparatus is designed to support eight or ten firemen and their hose, and it is calculated that it can be raised in a couple of minutes. [FIRE LADDERS.]

FIRE OBSERVATORY.—A tower or building designed for watchmen with a view to the rapid discovery of fires, and for giving early intimation regarding their location to the F. brigades. Most of the towns and cities of Northern Europe are guarded by means of fire towers. The engines and brigade are stationed, frequently, in the lower parts of the tower, so as to be ready at a moment's notice. In *Hamburg*, *St. Petersburg*, and *Warsaw* the arrangements of this character are particularly complete.

1862.—A fire observatory on a new and more economic plan was built for Mr. Hodges at the Lambeth Brewery this year. It was constructed entirely of iron, cast and wrought. Its height was 135 feet; its diameter at the top being 12 in., at the bottom 21 in. It was in fact an iron mast, with a cage working up and down, in which the observer managed to raise or lower himself by means of pulleys. A detailed account is contained in the *Jour. of the So. of Arts*, vol. ii. p. 309, by Charles B. King, M.E., who constructed it.

1867.—Captain Shaw was examined regarding these fire towers before the Select Parl. Committee which sat this year. 5129. We have had a system of fire towers recommended to us by one of the witnesses; the tower to be placed in a central part of the town; what is your opinion of that system?—My opinion is that in every town in which they have been estab. they have most signally failed: for instance in Vienna, St. Petersburg, and Hamburg; the first calls received from these towers have been so few as to make them practically worthless. 5130. Do you know the reason why they have failed?—The reason is that the towns are watched sufficiently for notice to be brought into the fire stations before a fire has got through the roof and become visible. The principle of the fire towers must always be to call the firemen after the fire is visible from the outside, and that is evidently a wrong principle. [FIRE CALLS.] [FIRE PROTECTION.] [HAMBURG.]

FIRE OFFICE MARKS.—See FIRE INS. OFFICE MARKS.

FIRE OFFICE, THE.—This was the first known asso. founded for carrying on the bus. of F. ins. in Gt. Brit. or elsewhere. It is supposed to have been based upon Dr. Barbon's scheme of personal ins. which had been commenced in 1667. *The Fire Office* was founded in 1680, although prob. it did not get fully to work until 1681. We have given a very full outline of the early incidents attending it under FIRE INS., HIST. OF. The office finally became *Phœnix* (No. 1), under which head we shall give any further details necessary to complete its hist.

FIRE ORDINANCES.—The codes of regulations for fire protection in Continental cities, and also in the American cities, are usually designated Fire Ordinances. Many of these will be referred to in various parts of this work.

The City of Lond. appears to have had at least two fire ordin. One promulgated by the Wardmotes in 1189; the other by the Lord Mayor and Common Council in 1667. For details see FIRE PROTECTION at these dates.

1875.—The last, and most complete F. Ordin. which we have seen was issued by the authorities of the City of *Chicago* this year. It may form a fit model for any city requiring to adopt really protective measures. Every ordin. however, to be really effective, must be adapted to the peculiar circumstances of the place for which it is designed. [FIRE PROTECTION.] [INS. ORDINANCES.]

FIRE PATROLS.—Night-watchmen, whose especial duty it is to be on the alert in regard to fire. They should be instructed in regard to especially dangerous localities, and also in regard to specially hazardous blocks, and even as to *persons* in regard to whom the "moral hazard" is considered to be strong. In some of the American cities, as for instance New York, the patrol arrangements are very complete. [FIRE PROTECTION.]

FIREPLACES.—That many fires are caused from the imperfect setting of stoves and registers, there can be no doubt. The subject will be considered under FIRES, CAUSES OF; and also under FLUES AND STOVES.

FIREPLUG.—Formerly called FIRECOCK. A mechanical contrivance for regulating the supply of water in the mains, in cases where the water supply is intermittent instead of constant. In cold climates considerable delay has sometimes arisen at fires in consequence of the fireplugs being frozen. This has occasionally, though rarely, happened in London.

1874.—A trial was made at Chicago of "Fricker's Telescopic Fireplug." The invention consists of an upright cylinder coming up nearly to the surface of the street. Within this is a sliding cylinder, fitted air and water tight by means of a stuffing-box. When the service of the plug is required, the cap of the outer cylinder is removed, the water valve turned, and the pressure of the water forces the interior cylinder, which is fitted with the usual hose attachments, far enough above the street level to be ready for use. The object of the invention is mainly to secure the water-plugs from the influence of frost: and in this essential respect it is regarded as entirely successful.

At the end of this year it was stated that the New River Co. had, at its own cost, placed upwards of 2000 plugs and fire boxes in the City of Lond. We should have been much more pleased to learn that this Co. had made arrangements for a constant supply.

FIRE PREVENTION.—Fire, known and used from the earliest periods of which we have any record, was first conjured into existence to be the servant of man; but the manifold uses to which he, in the course of time, sought to employ it, in connexion with the processes and circumstances of civilized life, have led to its being regarded, not unfrequently, as his master. Hence, for ages past it has been an object of the utmost solicitude to prevent fire from obtaining any such mastery. If preventitive measures had ever proved successful, the great business of *Fire Ins.* had never been called into play. As wealth increased, personal property accumulated, and required to be protected. With the growth of commerce such protection became a necessity. But for ages Fire Ins. did not come to the rescue. The people had to consider the question of preventing fires under the prompting of their own self-interest. If this desire of prevention had not engendered a feeling of prudence, even Fire Ins. itself might not have been either originated or sustained. Certainly, without continued measures of prevention, its rates of prem. must have been so onerous as to be in effect prohibitory. So that fire ins. has not caused the prevention of fires to be disregarded; but on the contrary, the pecuniary interests of the fire offices themselves have caused measures of fire prevention to be more systematically regarded; and so the subject has come to be one of acknowledged interest.

As against the measures of prevention, there comes into play the application of new products to the circumstances of our every-day life; of these may be mentioned especially *gas, lucifer matches, and petroleum,* under which last may be included the whole class of mineral oils. These have added greatly to the risks of fire. If we turn to the various processes of manufacture, the products of combustion have literally been increased an hundred-fold. Many of these will be specially noticed in our art. FIRES, CAUSES OF. The conclusion all must arrive at who study the subject is, that fires, in fact, *cannot be prevented.* All that can be done is to protect ourselves as far as possible against their disastrous consequences. The means of doing this will be set forth in detail under FIRE PROTECTION.

FIRE, PRESERVATION OF LIFE FROM.—See FIRES, DEATHS CAUSED BY.

FIREPROOF BUILDINGS.—A direct manifestation of the struggle made by man to prevent the mastery of fire over his works is seen in the efforts from time to time made to construct fireproof buildings. The success of the various attempts has been, and must continue to be, to a large extent, governed by the peculiar circumstances of the case. To protect buildings from the ordinary external influence of fire has never been attended with serious difficulty. But to construct a building which will resist the influence of fire from within—as, for instance, a building for storing inflammable or explosive substances—is a very difficult matter. We propose briefly to review the attempts which have been made in each of these directions.

The employment of material which would render whatever it was applied to incombustible, dates from a very remote period. Archelaus, a general of Mithridates, during one of the wars with the Romans, caused the wooden towers used in battle to be washed over with a solution of alum, by which means all the attempts of his opponents to set the wood on fire were rendered abortive. The use of alum to render clothing, woodwork, etc., fireproof, is usually esteemed a modern invention, and frequently quoted as an example of modern scientific and chemical progress.—*Young.* [FIREPROOF DRESS.] [FIREPROOF TIMBER.]

1633.—Dekins Bull obtained a patent for buildings of a fireproof nature, "so that fire will not injure them;" but, as Mr. Young has pointed out, "there is no certainty as to what means were used for the purpose!"

1722.—Mr. David Hartley obtained a patent for securing buildings from fire, by means of metal plates above and below the timbers, with dry sand or rubbish between them. The invention, or a similar one, comes before us again at several different dates. (See 1773.)

1755.—There was pub.: *The Manner of securing all sorts of Buildings from Fire; or a Treatise upon the Construction of Arches made with bricks and plaister called Flat Arches; and of a roof without timber called a Brick Roof. With the addition of some letters that have passed between the Count of Espie and Peter Wyche, Esq., on this subject, adorned with two copper-plates, serving to illustrate the whole work.* Written in French by Monsieur le Compt d'Espie, Knight of the Military Order of St. Louis; and translated by L. Dutens. A copy of this work will be found in the Library of the Corp. of Lond.

1773.—George III. by his Letters Patent under the Gt. Seal, dated 1st April, this year, granted to David Hartley, Esq., of Golden Square [afterwards M.P. for Hull, we presume a descendant of the David Hartley of 1722], his exors., admors. and assigns, "the full power, sole privilege, and authority of making, using, exercising, and vending, a certain particular method by him invented, of securing buildings and ships against the calamities of fire, within that part of H.M.'s Kingdom of Gt. Brit. called England, the Dominion of Wales, and the town of Berwick-on-Tweed, and also in H.M.'s colonies and plantations abroad," for the term of 14 years, "with a proviso obliging the said D. Hartley, by writing under his hand and seal, to cause a particular description of the said invention to be inrolled in H.M.'s Court of Chancery, within 4 months after the date of the said recited Letters Patent;" which was accordingly done, and was as follows:

> My invention of a particular method of securing buildings and ships against the calamities of fire is described in the manner following, that is to say, "By the application of plates of metal and wire, varnished and unvarnished, to the several parts of buildings and ships, so as to prevent the access of fire, and the current of air, securing the several joints by doubling-in, overlapping, soldering, rivetting, or in any other manner closing them up, nailing, screwing, sewing, or in any other manner fastening the said plates of metal, into and about the several parts of buildings and ships, as the case may require."

1774.—In the *Annual Register* of this year we find the following, dated from West Wycomb:

> I send you a short account of the experiments we tried here last Wednesday to set fire to a room which Lord le Despencer lately built, the ceiling having been plated according to Mr. Hartley's direction. The room in which we made the experiment is 15 feet long and 14 wide. Our objects were to try the power of the fire-plates to prevent the fire from ascending to a floor above, and from descending through an armed floor to the apartment below. Our first attempt was upon the ceiling of the lower apartment by setting fire to two cart-loads of dry faggots, which burnt with great fury for near half an hour, and seemed like the heating of an oven, but could not penetrate to the joists and floor above. We proceeded next to our second experiment, which was to try the power of the fire-plates in preventing any fire from penetrating from the floor downwards. Accordingly, we set fire to several faggots on the bare boards, and let them burn to ashes; but this was attended with no other consequence than making the boards look a little black, although the room below was exceeding hot.

In the supplies voted by Parl. this year is the following, under date 16 May: "To be paid to David Hartley, Esq., towards enabling him to defray the charge of experiments, in order to ascertain the practicability and utility of his discovery of a method to secure buildings and ships from fire; and that the same be paid without fee or reward, £2500." [Vide 14 Geo. III. c. 85, sec. 24.]

1775.—There are further accounts of Hartley's experiments, especially upon a building at Bucklebury, Berks; and in Mr. Hartley's house there, when on the King's birthday bonfires were made in the house on the floors of the rooms. See Annual Register.

1776.—Still further experiments by Hartley, on Putney Common, before the Lord Mayor and Corporation authorities. A pillar to be erected in commemoration of the invention. The Lord Mayor laid the first stone.

1777.—There was enacted 17 Geo. III. c. 6—*An Act for vesting in David Hartley, Esq., his exors., admors. and assigns, the sole use and property of a certain method by him invented of securing buildings against the calamities of fire throughout H.M. Dominions, for a limited time.* This Act recites:

> And whereas the said David Hartley hath, with great attention and labour, prosecuted, and is still prosecuting a variety of experiments in order to perfect the said invention: And whereas the said D. Hartley hath employed great sums of money out of his own private fortune, and must necessarily advance still larger sums before the said invention can be completed, and rendered of general public utility as well by sea as land: And whereas it will not be in the power of the said D. Hartley to carry his invention into complete execution, so as to render the same of the highest utility to the public of which it is capable, nor will there be any reasonable prospect to the said D. Hartley of being reimbursed the sums of money by him already expended and advanced, and the further sums necessarily to be by him expended and advanced, or of obtaining a proper return and recompense for so important an invention, unless the term granted by the said Letters Patent be prolonged, and his property in the said invention secured, not only within that part of Gt. Britain called Eng., etc., but also within that part of Gt. Britain called Scotland, for such time as may enable him to obtain an adequate recompense for his labour, time, and expense.

To the end whereof it was then enacted that the sole privilege of making and vending the aforesaid invention should vest in David Hartley, his exors., admors. and assigns, for 31 years. A penalty to be inflicted on persons making or imitating the invention; with, however, an exception in favour of H.M. Dockyards, where the invention might be used. Certain restrictions were laid upon the inventor: for instance, he was not to create a joint stock for working the same, nor transfer an interest in it to any greater number of persons than 5; nor was he to presume to act as a corp. body. Then:

> V. Provided always, That it shall not be lawful for the aforesaid David Hartley, his exors., admors. or assigns, to take any greater price than 6*d*. by the foot square for the plates of metal, mentioned in the above recited specification, commonly called fire-plates, unless the said pieces of metal shall be made of copper, or of any other metal except iron, or unless they shall exceed in weight 10 oz. avoirdupoise to the square foot.

After this Mr. Hartley remains out of sight until 1785.

1778.—Charles Lord Viscount Mahon, F.R.S. (afterwards Earl Stanhope), contributed to the Royal So. a paper: *Description of a most Effectual Method of Securing Buildings against Fire, invented by Charles Lord*, etc., etc. The method consisted of three parts, viz. Under-flooring, Extra-lathing, and Inter-securing. Those who desire to understand the details of these processes may consult *Chambers' Cyclopædia*, vol. ii. [1788] where, under *Fire, Extinguishing of*, the processes are described:

> Lord Mahon has made several experiments in order to demonstrate the efficacy of these methods. In most houses it is only necessary to secure the floors; and the extra expense of under-flooring, including all materials, is only about 9*d*. a square yard; and with the use of quicklime a little more. The extra expense of the method of extra-lathing is no more than 6*d*. per square yard, for the timber, side-walls, and partitions; but for the ceiling about 9*d*. per square yard. But in most houses no extra-lathing is necessary.—*Phil. Trans.*, vol. lxviii. part ii. art. 40, p. 884.

1779.—John Johnson obtained a patent for securing buildings from fire, said to have been of a similar character to Hartley's.

Same year, Dr. Edmund Cartwright patented the use of tiles as an incombustible substitute for the materials used to render buildings less liable to fire.—*Young.*

1785.—Mr. Hartley pub. a pamphlet: *An Account of the Invention and Use of Fire-Plates for the Security of Buildings and Ships against Fire.* [This was re-printed as recently as 1834, by a nephew of the inventor.] This pamph., in describing the process and results, says:

> Resistance to every possible degree of fire, such as distillers' shops and turpentine warehouses, may be accomplished by applying metal plates above and below the timbers, with dry sand or rubbish between them. In experiments repeatedly tried with this double application, the room was filled from the floor to the ceiling with faggots and pitch and tar. As to common dwelling-houses; when the single application of the plates was tried in the experimental house, where all air bricks were provided to the floors, the trials were continued from day to day to the same part of the ceiling and timbers of the house a great number of times after the plaster work was burnt down and destroyed; but the timbers could never be set fire to so as to burn of themselves, nor could the fire ever spread sideways; so long as the burning faggots were applied to the timbers, they were charred, perhaps, to the depth of an inch of their substance, but the plates over them acted as an unconquerable extinguisher, preventing them from taking fire and burning of themselves.

1792.—M. Nil Mosheim made many public exhibitions, in order to show that combustible materials might be rendered perfectly incombustible. Mr. W. Knox, of Gottenburg, also directed his attention to the same subject.

1797.—A cotton factory purporting to be of fireproof construction was erected by Messrs. Strutt at Belper in Derbyshire.

1806.—A patent was granted by Geo. III. under the Gt. Seat of England to Ambrose Bowden Johns, for a new invented composition called *Johns' Patent Tessera*, "composed of limestone or other stone powdered, or road stuff, where stone is made use of for repairing roads, and other articles of a stony, sandy or calcareous nature, with a sufficient add. of tar or other bituminous substances, mixed together by the application of considerable heat and powerful machinery, and afterwards compressed together and rolled into sheets by means of rollers acting with great pressure; to be used in the covering of buildings." (See 1810.)

1810.—There was enacted 50 Geo. III. c. lxxv.—*An Act to amend an Act of the 14th year of his present Majesty, for the better regulation of buildings and party-walls, and for the more effectually preventing mischief by fire within the Cities of Lond. and Westminster, by permitting Johns' Patent Tessera to be used in the covering of houses and buildings within the places therein mentioned.* It recites: "And whereas such composition has been found useful and safe for such purposes, and not liable to catch fire, so as to communicate the same to any adjoining premises." "And whereas it is expedient to allow to be used in the covering of buildings the said composition called *Johns' Patent Tessera*, as well as the several articles mentioned in the said Act of the 14th year of the reign of his present Majesty." It is therefore enacted that Tessera may be used in covering buildings within the Bills of Mort., with this proviso: "II. And be it further enacted, That the Tessera to be used pursuant to this Act shall not contain a greater quantity of tar or other bituminous substance, than is set out and described in the specification of the said composition called *Johns' Patent Tessera.* Any person using any counterfeit composition to forfeit £100 by way of penalty."

1813.—In the *Quarterly Review* pub. Oct. this year it was seriously proposed that iron might be introduced in the place of wood "into all buildings of the nature of magazines where valuable materials are intended to be deposited"—"in fine, we are now so far advanced in the *iron age* that, in the worst of events, we should not absolutely despair of being able to substitute for our wooden walls ships wholly constructed of iron"!

1824.—An asso. for the manufacture of FIREPROOF PAINT was set on foot, under which title details will be given.

1825.—Mr. Benjamin Farrow obtained a patent for using cast-iron joists as a means of rendering a building less liable to destruction and injury by fire.

1830.—Mr. James Braidwood, then "Master of the F. Engines in Edin.," pub. a work on the *Construction of Fire Engines*, etc., wherein he offers the following obs.:

> The subject of fireproof buildings might occupy a considerable space. Where the floors are arched with brick, which is a very common practice, particular care should be taken, that the walls be strong enough to bear the extra pressure thrown upon them by the arches. If the side walls have not been built strong enough, when they get heated the whole mass gives way, bringing not only destruction on the property, but certain death to every individual within the walls. In the fall of a common roof or floor, the rafters or joists generally come down in the centre, and lying in a slanting position there is a considerable chance of escape, by taking shelter in the windows or close to the wall, where a man may be tolerably safe for a short time; but in the other case every crevice is filled up by the falling bricks and stones.
>
> To make a building *fireproof*, the stairs must be of stone, and the doors of iron, otherwise the arched floors are of no use. Yet, strange as it may seem, I have sometimes seen these precautions neglected.
>
> There is a particular description of floor, which, although not altogether fireproof, is certainly (at least so far as I can judge) almost practically so. It is composed simply of planks 2½ or 3 in. thick, so closely joined and so nicely fitted to the walls, as to be completely air-tight. Its thickness and its property of being air-tight will be easily observed to be its only causes of safety. Although the apartment be on fire, yet the time required to burn through the floor above or below will be so great that the property may be removed from the other floors, or more prob., if the means of extinguishing fire be at hand, it may be subdued before it can spread to any other apartment. The doors must, of course, be made in proportion, and the partitions of brick or stone.

1843.—By the 6 & 7 Vict. c. cix. (local)—*An Act for the better protection of property in the Borough of Liverpool*—the mode of constructing warehouses to be deemed fireproof was defined as follows:

> 23. And be it enacted, That every cellar, vault, and room of every warehouse, hereafter to be constructed within the Borough, and intended to be used as a fireproof warehouse, including such carriage-way as aforesaid, but excepting the room immediately under the roof thereof, shall be entirely covered with an arching of brick and mortar of 9 inches thick at the least, to prevent, as far as practicable, the communication of fire, or otherwise with flags and stones, and with sufficient iron girder beams supporting the same to the satisfaction of the said Committee; and such warehouse shall have the roof belonging to it of iron principals and spars, with slates fastened without wood in or about the same; and every floor of such warehouse, except the lowest cellar or vault, shall be of concrete flag, of brickwork, resting upon brick arching as aforesaid; and such warehouse shall be built with iron girder beams; and the doors and door frames or jambs, whether external or in staircases, and the doorsills and heads, and window shutters and frames, shall be of wrought iron, except that the door frames and doorsills and heads may be of wrought or cast iron; and there shall be no wood in the construction of any part of such warehouse.

1844.—Dr. Henry Hawes Fox took out a patent for constructing fireproof buildings in the following manner:

> To render each floor as well as the roof of a building completely fireproof, so that the fire can neither be communicated from one story to another, nor be introduced into the building by burning away the roof; to avoid all lateral thrust or weakening effect upon the walls, and to distribute the weight over them instead of concentrating it on certain points; to secure the building from the attacks of dry rot; to give increased solidity, firmness, and durability to the structure; to render the floors practically sound-proof when finished with a boarded surface; and to combine these advantages with great simplicity and economy of construction, and with a less thickness of floor than is usually required.
>
> These objects are accomplished by forming the floors of the building of materials as imperishable as the walls themselves; the leading features of the system being the substitution of girders and joists, either of wrought or cast iron, for those of timber, and the employment of layers of incombustible materials, supported by and consolidated with the joists; the whole, when combined, forming a solid fireproof foundation, adapted to receive a finished surface, either of cement, gypsum, asphalte, tile, slate, stone, or other material; or upon which foundation the ordinary boarded surface may be laid down upon light sleepers or bevelled fillets.

The great object sought to be attained by this system is to have the building so constructed as to confine any fire that may break out in the locality in which it originates; a subject of the utmost importance in warehouses and buildings where much valuable property is stored.—*Young.*

The plan here described was successfully employed by the patentee in the building of a large private lunatic asylum in Gloucester.

Mr. Wm. Fairbairn, C.E., pub. a Rep. on the Construction of Fireproof Buildings.

1849.—Mr. James Braidwood, Chief of the London Fire Engine Estab., read before the Inst. of Civil Engineers, of which he was an Associate, a paper: *On Fireproof Buildings.* The same was afterwards pub., with the discussion thereon.

1854.—In the great fire at Gateshead this year, the bonded warehouse which was so totally destroyed was considered to be a double fireproof structure, being lined throughout with iron sheeting, and supported on metal pillars and floors. The brickwork parted from the sheeting by the heat, and crumbled away, and nothing remained but the red-hot skeleton or shell of the building. [EXPLOSIONS, *Chemical Stores.*]

Same year Prof. Hosking contributed to the *Encyclo. Brit.*, under title "Construction," an art. in which much valuable information on the subject of fireproof buildings is given. Some of the principles here laid down were afterwards put into practice in the building of a new portion of Messrs. Clowes' Printing-office; and later in Messrs. Beren Blomberg's Warehouse in Cannon Street, E.C.

1856.—Mr. Braidwood, then Chief of the Lond. Fire Engine Estab., read a paper before the So. of Arts—*Fires: the Best Means of Preventing and Arresting them; with a Few Words on Fireproof Structures.* The author says:

> What is "Fireproof Construction" is a question which has given rise to a great deal of discussion, simply, as it appears to me, because the *size of the buildings and the quantity and description of the contents have not always been taken into account.* That which may be perfectly fireproof in a dwelling-house, may be the weakest in a large warehouse. Suppose an average size dwelling-house 20×40×50=40,000 cubic ft., built with brick partitions, stone or slate stairs, wrought-iron joists filled in with concrete, and the whole well plastered. Such a house will be practically fireproof, because there is no prob. that the furniture and flooring in any one room would make fire enough to communicate to another. But suppose a warehouse equal to 20 such houses, with floors completely open, supported by cast-iron pillars, and each floor communicating with the others by open staircases and wells; suppose further that it is half filled with combustible goods, and perhaps the walls and ceilings lined with timber. Now, if a fire takes place below, the moment it bursts through the upper windows or sky-lights, the whole place becomes an immense blast-furnace, the iron is melted, and in a comparatively short time the building is in ruins, and it may be the half of the neighbourhood destroyed.

He continues:

> The real fireproof construction for such buildings is by groined arches, supported on brick pillars only. This mode of building, however, involves so much expense, and occupies so much space, that it cannot be used with advantage. The next best plan is to build the warehouses in compartments of moderate size, divided by party-walls and double wrought-iron doors, so that if one of these compartments takes fire, there may be a reasonable prospect of confining the fire to that compartment only.
>
> Again, cast-iron gives way from so many different causes that it is impossible to calculate when it will give way. The castings may have flaws in them; or they may be too weak for the weight they have to support, being sometimes within 10 p.c. of the breaking weight. The expansion of the girders may thrust out the side walls. For instance, in a warehouse 120 ft. × 75 ft. × 80 ft., there are 3 continuous rows of girders on each floor, with butt joints; the expansion in this case may be 12 in. The tie-rods to take the strain of the flat arches must expand and become useless, and the whole of the lateral strain be thrown on the girders and side walls, perhaps weak enough already. Again, throwing cold water upon the heated iron may cause an immediate fracture. *For these and similar reasons the firemen are not permitted to go into warehouses supported by iron, when once fairly on fire.* . . . .
>
> Covering timber with sheet iron is very often resorted to as a protection against fire; but Dr. Faraday, Prof. Brande, Dr. B. D. Reid, and Mr. W. Tite, M.P., are of opinion that it may be useful against a sudden burst of flame, but that it is worse than useless against a continued heat. . . . This arises from iron being so good a conductor that when heat is applied to it, it becomes in a very short time nearly as hot on one side as the other.

In the discussion which followed many important facts were elicited, some of which are noted under other heads:

Mr. Charles Mayhew, District Surveyor, said—Houses ought to be constructed on the French system, and not as they were built here on purpose to burn. They were piled up as the wood was placed in the grate to light a fire. The floors were wood, the partitions were wood, the stairs were wood; so put together as to be all hollow, and so connected as to allow air drafts in every direction. It was difficult perhaps to construct anything fireproof, but still it could be approximated to; it might perhaps be more costly so to build, but what was cost compared with loss of life?

Mr. John Wyatt Papworth said he assumed that it would be agreed that what people called fireproof materials were literally the least protection in a great fire. Thus stone staircases were likely to crack at the wall, and fall, long before an equally solid wood staircase would be unsafe to the escaping occupier. Iron beams pulled the whole building down with them, whereas wooden beams, sadly charred, remained long after the engines had ceased working; and in a great fire even brick arches failed and fell. He admitted that very thick arches would stand a great heat; but the little things which were now called brick arches were impotent even before a moderate fire. Fireproof did not mean incombustible, but only, "not very likely to be destroyed by fire." Covering wood-work with metal was allowed by ins. offices to be a prevention to a certain extent, that is to say, if a current of air passed between the metal and the wood. A stone was an equal prevention under such circumstances.

The same year (1856), a little later, Mr. W. Bridges Adams read a paper before the So. of Arts on *Fireproof, Non-combustible, and Fire Extinguishing Buildings.* He says the building of cities might be, but is not, a philosophical process. Amongst the necessities of cities such as he proposes would be that of absolutely incombustible buildings. "Walls are made perfectly incombustible of brick and mortar, but they are not incapable of destruction by the agency of burning materials, because by the action of fire the mortar returns to its original condition of quicklime. To be perfect they ought to be of fire stone or brick, cemented with fire clay." "Floors may be made of groined brick arches, resting on brick pillars, but to be indestructible by fire, they also should be built without lime mortar." "Where no mass of combustible material exists in the building, floors of sawn slate may be applied; the joints being caulked with elastic material." "The problem to solve is to make the columns and beams fireproof, and to make the fires that may happen self-extinguishing. If the floors be formed of brick and fire clay, and the columns be surrounded with the same material, and the brick surrounded with sheet iron to prevent wear, the first object will be accomplished.

There is no more difficulty in making the building fireproof than in constructing one of Milner's fireproof safes. The central walls should all be fitted with sliding iron trap doors. The stair heads should close with wrought-iron doors, the windows with wrought-iron shutters." "If cities were built on such a system, it is quite clear that there would very soon be an extinction of F. assu. cos." "Fire ins. offices are in short either a silent satire on human ignorance which erects dangerous buildings fitted for burning down, or an indication of poverty of power as regards capital, or poverty of invention, or both. . . . Our true policy is to work onwards as fast as we can towards a perfect building system."—Vide *So. of Arts Journ.* vol. iv.

1862.—At the International Exhibition in Lond. this year, Messrs. Fox & Barrett introduced an "ingenious system of fireproof flooring." The Rep. of the Jurors (Class X. Sec. *a*) says:

> Its success has been unequivocal, and it is to be regretted that it is not more frequently used in the classes of houses and other structures for which it is adapted, and where in *preventing and arresting fires* it would be most useful. For this very clever and simple system a medal has been awarded to Mr. H. Barrett (U.K. 2235).

1863.—Mr. Charles B. King, Mechanical Engineer, read before the So. of Arts a paper: *On the Suppression and Extinction of Fires*, wherein he says:

> Buildings cannot be made wholly fireproof, but they can be constructed with a view of rendering them impervious to fire, viz. to resist, not assist, any fire that may break out upon their floors. Many architects and other persons of position have from time to time turned their attention to this subject, and a large number of patents have been the result of their deliberations. It would be needless to go through the list of these, so I shall draw your attention to the model mill at Saltaire, belonging to Messrs. Titus Salt, Sons & Co., which has been constructed fireproof throughout. The floors . . . . are composed of longitudinal cast-iron girders, from the bottom flange of which a brick arching is sprung; this is bound together transversely by tie-rods on the top of the arching; to form the floors flag-stones are laid, between which and the arch a layer of concrete is laid.

He proceeds to include in his estimate of fireproof buildings those in which water jets are laid on, such as we have spoken of under FIRE EXTINGUISHMENT.

In the discussion which followed Mr. Baddeley referred to Bunnett's fireproof floor, which was composed of bricks geometrically formed, so as to interlock with each other—an arrangement which enabled the floor to be made either slightly convex, or completely flat, and the straining of the walls was prevented by tie-rods imbedded in the bricks. Mr. Bunnett had constructed a floor of that description at Deptford, which had been tested as to its strength; and also as to its fireproof qualities: and the non-conducting power of the bricks was such that, with the largest fire they could place beneath it, it was impossible to ignite sulphur or gunpowder on the upper side of the floor. It appeared to him to be the most perfect fireproof floor he had ever met with.

1864.—Mr. Henry M. Eyton, Architect, contributed to the *Jour. of the So. of Arts* an account of the various modes of fireproof construction of dwellings then in use. This paper is of an essentially practical character, and should be consulted by all who seek more detailed information than it is our province here to give.

1866.—Mr. C. F. T. Young, C.E., in his *Fires, Fire Engines, etc.*, pub. this year, says:

> The construction of buildings entirely fireproof and uninflammable has long been a favourite idea, and one on which no small amount of thought and money have been expended, *but unfortunately with anything but satisfactory results*. So far as practice and experience have hitherto taught us, no safety from the destructive ravages of fire has been or can be obtained by the use of the most uninflammable materials for building purposes, unless some other modes of employing them be adopted than those hitherto used. Most of the tremendous and disastrous conflagrations of late years have either originated in or extended to these so-called "fireproof" structures, and as in these the most valuable goods and materials have been stored, on account of the assumed security afforded thereby, the losses have been correspondingly heavy.

He further says, when these buildings, even the most scientifically and expensively constructed, are, being on fire, once allowed to get out of hand, as it may be termed, their destruction, and that of their contents, is inevitable. The stones crack and crumble with the intense heat; the iron beams push or pull everything down; the brick arches fall to pieces; concrete is nowhere: thus in practice it is found that in a very short period, unless the most lavish supply of water and powerful and efficient means of throwing it on the burning materials are quickly and readily available at the earliest moment the fire is discovered, the whole mass becomes a huge undistinguishable heap of burning and smoking ruins.

Again, these "fireproof" buildings, as at present constructed, are invariably found, in case of catching fire, to "hold" the fire, and by this means render their total destruction, and that of their contents, a dead certainty. Finally:

> It may be laid down as an axiom, that no one substance in nature is absolutely incombustible. The variation or differences will be found in the degree, greater or less, belonging to each substance; and also in the circumstances under which it is placed, or the position in which it is situated in a building on fire. A material which under one condition will be little injured by fire, will under another be totally destroyed. . . . Iron, as at present applied, is found to bend and twist in a most extraordinary manner when exposed to the action of fire; and it matters but little whether it be wrought or cast, both being subject to the same operation; but cast-iron has the additional disadvantage of being liable to crack and break when exposed in a heated state to the influence of a stream of cold water. . . . *Stone* is peculiarly liable to split and fly when exposed to heat; and this is not decreased, when it is in a heated state, by the access of cold water. . . . It is advisable to avoid the use of iron columns, whether cast or wrought, as supports in such a building; and if brick is used, then

> it should be of the best quality, and put together in the most substantial manner. Stone is objectionable, unless coated with some non-conducting material, which should be thick enough to stand a great degree of heat, and adhesive enough not to scale off when exposed to it. Experience has shown that stone and cast-iron, unless protected by some incombustible substance, are not fit for fireproof buildings—the stone splitting, cracking and crumbling under the combined action of heat and water, and the iron expanding, twisting, melting and cracking, under the same circumstances.
>
> *Brickwork*, unless of a very substantial character, stands but little chance when exposed to the intense heat met with in large fires. The mortar crumbles out, the walls bulge and crack, and the material at present called brick, and used as such in Lond., crumbles to dust, and as it were melts away, infallibly bringing down the best part of the structure in which this stuff is employed, and exposed to the action of fire.
>
> *Iron*, whether wrought or cast, constantly melts when forming parts of buildings destroyed by large conflagrations. In case of sugar-houses and warehouses this frequently happens; and in all instances where iron has not been thus destroyed, it has suffered materially.

Other points he discusses are referred to under FIRE PROTECTION.

1867.—A Select Parl. Committee on "Fire Protection" sat and took evidence. The main results of that evidence will be dealt with under FIRE PROTECTION. The statements of some of the witnesses called regarding fireproof buildings may be appropriately noticed here.

Mr. Geo. Adam Young, Surveyor to *Imperial* Fire.—*Q.* 326. Have you turned your attention to fireproof buildings for dwelling-houses?—Yes; I think fireproof buildings for some purposes are very good; but I doubt their utility in warehouses for the storage of goods. 327. I am speaking of dwelling-houses?—It is rather too costly for them. 328. Have you turned your attention to that possibility?—Yes, I have; it is not practised much in ordinary dwellings; it is practised in public offices. 329. Do you think that that could be carried out in dwelling-houses, particularly in our large lodging-houses for the poor, where a great number of people are accommodated?—Yes, I think it might be done. 330. And how would you do that; would you do it in the same manner as it is done on the Continent, by concrete floors?—We frequently use wrought-iron beams and light brick arches, and cement flooring. On the Duke of Bedford's Estate, at the present time, his rule is that the roofs are all to be made in that way; they are all fireproof roofs. I have built several, and I shall build several more this year: wrought-iron beams, light brick arches, and cement flooring. 331. What is your opinion of *Iron Roofs* generally?—The ordinary iron pitched roofs for warehouses are not of good construction. 332. What is your objection to them?—My objection to them is, that by the expansion of the metal, the walls generally give way, and then the fire, if it is in the neighbourhood of other buildings, extends to them. That was illustrated in a most remarkable degree in the last fire [1866] that took place in the Jute Warehouse at the West India Dock. It was a large warehouse, with an iron roof. The iron roof expanded, cracked the walls, and then fell against them. It did not push the walls down: if it had, the fire would have extended along the whole quay and destroyed all the goods that were there, and perhaps might have extended to the shipping. They have decided to have no more roofs of that kind, for that reason. 333. But is not the objection to the use of iron generally in building, the expansion of the iron in heat pressing out the walls?—I do not think that the fireproof construction for goods warehouses, warehouses only for the deposit of goods, is worth anything, because the goods will be burnt. Clearly, if this room is fireproof, and it is filled up nearly to the ceiling with combustible goods, it is of very little use for it to be fireproof; the combustible goods will heat the roof, and down will go the arches; this is generally the case. I can give you a particular instance. The late Mr. Cubitt had two buildings adjoining each other; one was fireproof, and the other was an ordinary building. He filled them with joiner's work; a fire took place: the fireproof one came down, and the other remained as it was, with the roof off.

Mr. Wm. Swanton, Supt. of Lond. Salvage Corps.—*Q.* 1851. Can you speak on the so-called fireproof structures; do you think they are efficient or not?—I think that many favourable changes might be made; it is very difficult to deal with these so-called fireproof structures; the building itself may be fireproof, and the merchandize may be of that inflammable nature that the best description of fireproof buildings could not withstand a serious fire. 1852. But a fireproof warehouse itself is a place where you can have any amount of fire in one compartment, and yet it must be impossible to get to another compartment?—There is scarcely a building of that kind in Lond., though some are very good. 1853. Do you know the East and West India Warehouses in Fenchurch Street?—Yes. 1854. Those are some of the best buildings in Lond., are they not?—Yes, I should say they are. 1855. Taking them as being the best in Lond., could you suggest anything that would make them perfect, if perfection could be obtained?—No, not offhand; they are as nearly fireproof as anything I know of in Lond. It does not always depend on the buildings, but their contents, generally, for the spread of fire.

Mr. Joseph Jennings, Surveyor to the *Guardian* Ins. Co.—2635. Is there any such thing in your experience as a fireproof building?—No building can be called a fireproof building except a building in which in each chamber there cannot be heat enough to destroy the material of which it is built; it may be fireproof as long as you have not enough in it to destroy the construction. 2636. It may be fireproof so long as there is not sufficient fire?—It depends upon what the article is; it depends entirely upon the quantity of heat you produce. A merchant's strong room you may make fireproof.

Mr. Charles Freeman, Surveyor to *Sun* Fire.—4833. Will you state to the Committee some of the results of your observation of the great fire in Tooley Street, first with regard to the construction of the buildings?—I observed with regard to the *fireproof floors* in Hayes' warehouse, that they had been constructed on iron girders, resting on iron posts, and that they were quite inadequate to prevent the progress of fire in buildings stored with merchandize; the iron columns being heated, the effect of water upon them was that they collapsed, and the brick arches and the girders all fell down together; it did not stop the fire from its upward progress; and from the manner in which they fell, they tended to the more complete combustion of the articles in the warehouse than ordinary wood would, because the floors in that case fall closely, and there is greater salvage. 4834. Suppose the fire had begun in the upper part of the building, what would have been the effect?—In that case it has a good effect, particularly if the floor is incombustible; but generally in those warehouses they put a wooden floor on the top, and then of course it is not so effective; otherwise it arrests the progress downward of a fire. 4835. Your opinion, derived from experience such as that of the fire at Tooley Street, is that iron should not be used in fireproof warehouses, where combustible materials are stored?—Not exactly so; but that a horizontal division of that sort is not sufficient in a warehouse stored with merchandize; but I would make a reservation: although they are not useful or perfect for warehouses, they are exceedingly good for ordinary dwelling-houses, and shops in which the goods are not so combustible, and not so large in quantity. No doubt many of those floors, either what they call Fox and Barrett's floors, or Dunnett's arches, are very good, and quite sufficient for the purpose of arresting flame in dwelling-houses. 4836. Of course you mean cast-iron, and not malleable iron?—I think there is very little difference between them: cast-iron flies and wrought-iron bends. 4837. You say that fireproof floors are good in dwelling-houses?—Very good; and for chambers. 4838. Are you aware how the floors are constructed in *France?*—I have seen a great many instances, and I never knew them fail. 4839. Do you think that it would be an advantage to introduce similar floors in this country?—A very great advantage. . . .

Captain Shaw, Chief of the Metropolitan Fire Brigade.—5241. . . . The Committee have been informed by a Lond. architect that he could make the buildings here far more fireproof if proper mortar were used?—There is no question about that, and the mixing up of the mortar is one of the points which comes up in the new Bill before the Metropolitan Board. 5242. Would you not consider it almost a nefarious practice on the part of builders to use this inferior mortar, when perhaps by the contract they are bound to use a better kind of mortar?—If they are bound by the contract to use a better kind of mortar, it is obvious that it is a nefarious practice; but so long as they are not bound by the law to do so, and there is no contract, it is not nefarious. 5243. But would it not in your opinion be advisable for the law to interfere, and insist upon proper mortar being used?—Yes, and I think that will in all prob. be proposed by the Metropolitan Board of Works. 5244. That would have the effect of preventing the rapid spread of fires which at present takes place in consequence of inferior mortar being used, would it not?—I am not very much of opinion that fires can spread through any walls, however ill-constructed; the consequence of bad mortar has rather been to cause the walls to fall, and kill people; vertical walls stand a long time, no matter how ill-made, if they are constructed of incombustible materials. I have brought a plan with me of flooring and joisting, which I conceive might possibly be adopted more generally in Lond. This plan was devised by Mr. Marrable, who was formerly architect of the Metropolitan Board of Works; I put that plan in as being, in my opinion, a safer and a sounder mode of construction than any of the common fireproofing that one sees. 5245. It is very similar to the French system, is it not?—It is in fact the French system adapted to Lond., but there is great ingenuity in the way in which Mr. Marrable has carried it out.

1872.—Capt. Shaw pub. his *Fire Surveys*, in which many useful suggestions will be found regarding the construction of buildings in regard to the purposes to which they are to be applied. The following passage will indicate the nature and scope of the work:

> The use of stone in building has not only received legislative sanction, but has in certain cases been made absolutely compulsory. It is, perhaps, now useless to inquire how such expressions have been introduced into Acts of Parliament as "stone or other fireproof materials," or how such provisions have been introduced as those which make it compulsory to construct "floors of lobbies, corridors, passages, and landings, and also flights of stairs," of this most dangerous of all materials—dangerous, whether considered as to its property of intrinsic strength, strength for withstanding shocks, power of resisting heat, or, in fact, any other qualification except appearance. But it is by no means useless to continue to combat the principles on which these terms have been introduced, or to lay down others which may lead to a diminution of the constant and serious dangers resulting from them. It is not too much to say that any enactment which contains such an expression as "stone or other fireproof material" proceeds on an assumption involving a serious error, inasmuch as stone is in no possible sense fireproof, but, on the contrary, yields to the effect of fire more rapidly than almost any other material commonly used in building. It is true that it does not, like wood, add fuel to the fire, but it does worse: its known tendency to split off from the walls and fall down altogether prevents the firemen from availing themselves of the best positions for their work.

The great fire in Chicago last year drew much attention to the subject of fireproof buildings in the U.S. Mr. Hiram Powers, the great sculptor, wrote to the man. of an ins. office as follows:

> But it may be asked, is it possible to make a city fireproof? I answer yes, and without any great

> extra expense. To prove this, I have only to say that although there have been frequent fires in the city of Florence during the 34 years of my residence in it, not one house has been consumed, except a theatre, and that was not entirely destroyed. Rooms full of goods have been heated like ovens by ignited calicoes, straw hats, etc.; but as the floors above and below were all covered by thin brick tiles, the goods burned without ventilation. And as there was no flame, a smell like that of a coal-pit soon gave the alarm, and the fire was soon extinguished by no other engines than a hand-squirt, holding about a gallon, which discharged a well-directed stream through some aperture. . . .
>
> The secret of fireproof building is this: It must be made impossible for the flames to pass through the floors or up the stairway. If you will have wood floors and stairs, lay a flooring of the thinnest sheet-iron over the joists, and your wood upon that; and sheath the stairs with the same material. A floor will not burn without a supply of air under it. Throw a dry board upon a perfectly flat pavement, and kindle it as it lies if you can. You may make a fire upon it, and in time consume it, but it will require a long time. Prevent drafts, and though there will still be fires, no house will be consumed. The combustion will go on so slowly that discovery is certain in time to prevent any great calamity. But the roofs, how about them? Slate or tiles? Zinc melts too easily. I believe that hard burned tiles, if flat, would stand the frost at home; and if so, they constitute the best roofing. My house has no joists. All the floors are of tiles resting on arches. One of these arches was made over a room 25 feet square by four men in 4 days. The bricks are about 1½ in. thick, and laid edgewise with plaster of paris. There was no framework prepared to lay them on, unless you would so term four bits of wood which a man could carry under his arm. And yet this arch is so strong as to be quite safe with a large dancing party on it. I have never heard of one of those floors falling, and they are absolutely fireproof. Of course light arches like these would not do for warehouses. It would pay, I think, to send out here for an Italian brick mason who knows how to build these thin but strong arches for dwelling-houses. I know there is a prejudice at home against brick or composition floors: "Too cold in winter," it is said. And so they are, if bare; but cover them with several thicknesses of paper and then carpet them, and no one can discover the slightest difference between their temperature and that of wood floors. . . .

The Boston, U.S., conflagration occurred in the fall of this year, and still further attention was directed to the subject of fireproof buildings.

Experiments with a new mixture called the "Metallic Cement Roofing" were tried in *Chicago* this year. The advantages claimed for the invention were—1. Being the cheapest in use. 2. Being absolutely waterproof. 3. Being lighter than any other covering. 4. Being the most durable of any.

The "Selenitic Mortar and Concrete," invented by Major-Gen. H. Y. D. Scott, C.B., deserves mention at this point. Its fire-resisting properties were put to the test, in the case of the fire at Mr. Hankey's mansion in St. James's Park, 1875. The cement costs under 10*s.* p. cubic yard, including labour.

1873.—The So. of Arts was engaged in an inquiry concerning the means of protecting the Metropolis against conflagration, and Mr. Sharp submitted to the Committee appointed for the purpose a plan and details of an absolutely fireproof warehouse. It is, practically speaking, a furnace divided into compartments. The whole structure, external and internal walls, roof, and floors, would be built of fire-clay bricks, joined with fire-clay; and all the doors and shutters would be blocks of fire-clay. The staircases would be of the same material, or of hard old oak. Within the walls there would be tubular channels connected with hydraulic mains, and so arranged that each room singly might be closed, and flooded with water, if fire should break out among its contents, or that a continuous flow of water might be directed over the external walls, as a protection during the combustion of adjacent buildings. From the description given there can be little doubt that such a warehouse would realize the objects of its designer; but it would probably have to be constructed without much reference to beauty or to decoration, and Mr. Sharp stated that its cost would be "about double" that of a warehouse of the ordinary kind. For mercantile purposes, therefore, the question resolves itself into one of profit and loss, or into a comparison between the cost of construction and the cost of ins.—*Times.*

There was this year estab., "The Monolithic Fireproof and Sanitary Construction Works, Lim.," for the purpose of working "Brannon's Patent" for constructing buildings with an entirely fireproof material known as the *Monolithic Compound.* A test-house was erected at Edmonton, and various experiments were conducted in the presence of architects and scientific men of distinction, with apparently entire success. We do not know if the method has been brought into practice.

Mr. Arthur Gilman, Architect, proposed a new plan of fireproof building, in which the main feature was iron girders and gypsum flooring.

Before the Liverpool Architectural So. this year, there was read a paper on this subject, of which we have the following newspaper outline:

> This invention consists in the utilization of earthenware and cement concrete with iron and steel and metal wire in such combinations as to resist the most glowing furnace heat. The object of the inventor is to provide walls, partitions, floors, and roofs light, cheap, durable and thoroughly fireproof.
>
> Walls, partitions and roofs are constructed of sheet-iron or steel, so formed as to represent one-half of an octagonal honeycomb cell in transverse section, reversed and placed as flitches parallel to each other, with a space of six inches intervening. In this space are pipes of hollow earthenware, in two feet lengths, and the iron flitches are bolted to and through the pipes, thus forming a composite girder, which is light and strong and capable of resisting the flame. Partitions are constructed of half-octagonal honeycomb iron or steel cells, with metal wire stretched across (instead of inflammable laths) to receive the cement concrete or plaster, the wire serving to tie the iron and steel lengths and give strength to the concrete. One great excellence is that through the hollow earthenware pipes ventilation to any part of the structure can be secured, and, if desired, hot air may be conveyed from the basement furnace.
>
> It is well known that Portland cement, with which the floors are laid, is more intractable to fire than granite or any of the stones, and, while its tensile strength is very great after it has had a fortnight to

harden, it continues to increase for years. The cheapness, however, is a not less desirable feature in the proposed new architecture than the solidity afforded. The Portland cement may be amalgamated with old bricks crushed small, well-washed gravel, sand and furnace slag. Such material, besides being more fireproof than granite or solid iron, is so inexpensive as to put fireproof houses within the reach of the thrifty poor and all house-builders.

The system of imbedding or incasing the metal uprights and girders in concrete and passing the metal rods in concrete or fireproof pipes is certainly, of itself, one of the greatest contributions to domestic and municipal safety yet made by the architectural genius of the age. The tensile strength of the flooring thus made, after it had been given 18 days to crystallize, was safely loaded with 31 tons of dead weight, showing a carrying power difficult to surpass.

The question of the building stone which bests resists the action of fire attracted considerable attention. Dr. Ott, of New York, after various experiments, showed that limestones, as a class, are most unsuitable for building purposes, owing to the rapidity with which they calcine when exposed to a high temperature. And among the limestones those which contain magnesia give way the soonest, and are therefore to be avoided. Of the primitive rocks, granite, gneiss, and mica are untrustworthy, for they crack to pieces even when exposed to radiant heat. In their natural state they contain water, and the stone explodes by the raising of the temperature. For these reasons Dr. Ott gives the preference to the sandstones, which have an enormous heat-resisting quality; and with the sandstones he ranks those artificial stones which contain lime and alumina silicate, which, as is known, withstand almost any amount of heat.

1874.—The *Architect*, 28th Mar., contained one of the most thoroughly practical art. upon fireproof buildings which has yet appeared. The writer's main positions were the following: 1. That buildings, of the warehouse class especially, should be constructed wholly of incombustible materials, and of such, moreover, as are unaffected by intense heat. 2. That they should be built in compartments, capable of instant isolation. 3. That they should be proof against fire from without. 4. That in the event of fire in any one compartment, and the inevitable consumption of its contents, an intense accumulation of heat to endanger the building generally should be impossible.

1. To secure the first in a strictly sound and scientific manner, the highest talent of the civil engineer and architect is demanded. The use of wood constructionally should be discarded, and our scientific men might do good service by discovering a mode of construction with known substitutes, which should dispense with its employment. The too free use of iron in exposed situations has been found most objectionable; stone has equally failed; and good honest brickwork, especially when the mortar used is fire-resisting, would appear, after all, to be the most reliable. As, however, iron must enter into the construction, to admit of the large rooms in modern buildings, it would be essential, and by no means difficult, so to isolate vertical columns, girders, and tension rods, as to make them unaffected by the fiercest heat generated in their immediate vicinity.

2. The facts of the fragile modern doors of ordinary buildings being the chief outlets for the spread of fire, has scarcely been adequately noticed in the otherwise exhaustive discussions. No sooner is the frail door burned through, than the fire rushes up the staircase, which thus acts the part of a huge chimney, in creating a draft, and increasing the fire—being itself a vehicle for transmitting the fire to other parts of the building. Even iron doors buckle and twist under intense heat, and have failed lamentably. There is, however, a description of door . . . *absolutely fire-resisting*. They are partly constructed of refractory fire-clay, and are made to slide into spaces left in the thickness of the walls. They overlap the door aperture by several inches on all sides, whereby their iron-framework is well removed from any possible contact with fire.

3. It is needless after the narrow escape of Lowndes Square [from the fire at the Pantechnicon] to point out the danger to which an ordinary town house is liable from the ignition of its external woodwork. Safety from external fire may be secured by the application of the same construction of fire-clay doors and shutters already described, to the external doors and windows. These fire-clay shutters have been made to slide over the wall-faces, both internally and externally; and better still, into recesses in the wall itself, so that on the first alarm of fire the premises may be rendered impervious to the enemy in a very short space of time.

One further source of external danger lies in the ordinary construction of roofs with wooden framings, generally as dry as tinder, and readily inflammable, even through their slated coverings in most cases. *These should be universally superseded by the cheaper, more durable, and fire-resisting flat roof*, now proved by several examples to be quite practicable when constructed of concrete faced with tiles.

4. Whilst advocating the provision of all available appliances for "knocking out" incipient fire, such as hydrants, hose, etc., the necessity should, above all, be recognized for such construction as would facilitate the safe and rapid combustion—if burn they must—of any one compartment, rather than risk the contents of other departments through accumulated heat, by denying to the flames, from a portion ignited, a safe and free exit by a recognized channel. To this end a sufficient shaft should be constructed from the ceiling level of each compartment (which ordinarily would prove an excellent means of ventilation) for the purpose of discharging the fire, so to speak, harmlessly up the chimney. The condition of each compartment would be the reverse of an ordinary brick oven, which is constructed to accumulate intense heat (without the slightest risk to its surroundings), whereas the arrangement under consideration would provide compartments structurally as non-inflammable as ovens, with the ever-present means of discharging instantaneously accidental fire, whereby accumulated heat would be rendered impossible.

A series of important experiments was conducted at the works of Messrs. Easton and Anderson, at Erith, the object of which was to test the fire-resisting qualities of fire-clay when used for floors, and also as a protection for iron girders. The results were conclusive, as may be seen by reference to Van Nostrand's *Engineering Mag.* for August this year. We believe these experiments were wholly or in part made at the instance of Mr. Wichcord, the architect of the National Safe Deposit Co. See conclusion of this article.

There was published in Chicago, by James John, a pamph.: *The Theory of Fireproof Construction as applied to Wood Joists*. The author says: "I claim that a floor of wood joists, protected as here proposed, cannot burn any more than the wood blocks in the paved street; and the top edge of these merely charred in Chicago's great fire." Experiments were tried; and the results were favourably reported.

The Hon. Geo. P. Marsh, U.S. Envoy Extraordinary in Rome, wrote regarding the buildings in Italy strongly confirmatory of the views expressed by Mr. Hiram Powers (1872).

1875.—A Committee of the National Board of Fire Underwriters of the U.S., whose province it is to take charge of the subject of "Construction of Buildings," believing the obtaining of Fireproof Buildings for common business purposes to be impracticable, turned their attention to the desirability of securing the erection of "standard buildings," which should be "measurably free from danger by fire"; and accordingly they report to the general body that they believe the following "combine the essentials of practicability and economy of construction," viz.:

Walls.—Independent walls to be brick or stone, and, for the first and second stories, four inches thick for every story the building is in height, and may recede four inches at the beginning of each story above the second, except the last, which shall be the same thickness as the one next below, and continue through, and at least two feet above the roof, and be *coped with stone.* At the beginning of each story, where the wall does not recede, ledges shall be made, on which joists or timber shall rest.

Party-walls shall be four inches thicker than independent walls, and at the beginning of each story where the wall does not recede, ledges shall be made on both sides of the wall, on which joist or timbers shall rest.

No joist or timbers shall enter a wall.

If the *front* is of *iron*, it should be solidly backed or filled in with brick.

Windows.—All windows should be provided with iron shutters (*except the first story, front*), hung from eyes fastened in the walls, with the latch handles through the shutter *outside*, to enable the firemen to open them if necessary.

No furring or lath to be used. Plaster to be laid on the walls. An independent wall of the given thickness is believed to be a sufficient protection against dampness.

Floors to be of Georgia pine, laid on the timbers *after* the spaces between the timbers have been thoroughly filled *flush* with a composition of plaster and cement; *the flooring to be closely scribed up to the front and side walls.* (*Note.*—Important and now very much neglected.)

Ceilings to be of slabs of fireproof material 1½ inches in thickness, and screwed to the under side of the beams through iron strips, and plastered.

Roofs to be of slabs of fireproof material (such as recently approved by the New York Board of Fire Underwriters), laid on the roof timber 1½ inches in thickness, and covered with metal or approved composition roofing.

Mansards not constructed entirely of fireproof material to be avoided.

Skylights to be of cast or wrought iron frames, filled with glass not less than ½ inch in thickness.

Elevators, Dummies or Hatchways to have substantial, well-fitting traps.

Stairways to be provided with traps or doors.

Columns or Supports to be of Georgia pine; not iron or stone.

Flues.—Air or smoke, in accordance with building laws.

Steam, Gas or Water Pipes to be carried up through recesses in the walls; in *no* case through the floors.

Boilers to be prohibited from being placed inside of the building, unless in a complete fireproof room.

Communications.—In all cases to have substantial double iron doors and stone lintels.

Height.—In reference to the important question of height of building, your Committee would suggest that, had the recommendations of the underwriters on this point in the rebuilding of Chicago been followed, viz. to limit mercantile buildings to four stories or not exceeding 60 feet in height, that city would not now be nearly so hazardous, and there would be fewer *tenantless lofts* without revenue; and the same may be said, to a limited extent, of New York city. In the former city it is safe to say that two-thirds of the fifth or sixth lofts have remained vacant since their erection.

The *American Builder* drew attention to the invention by Mr. H. W. Johns of N.Y. of an *Asbestos roofing:* "This roofing is entirely different from any other material in use. It consists of a strong canvas, a surface layer of patent asbestos-coated felt, saturated with patent acid and waterproof composition, and a manilla lining. These materials are joined together with intermediate layers, and the whole compressed into a compact, flexible sheet resembling leather, which is waterproof and proof against sparks." Again, "His asbestos roofing is undoubtedly one of the most valuable inventions of the age. Protected by patent he has the sole right to use this indestructible fibrous mineral in combination with animal or vegetable fibre, ground or powdered minerals, resinous and oleaginous substances, and rubber, and for roofing, sheathing, felts, cements, paints, and coatings." [FIREPROOF DRESS.]

Mr. Sydney Myers, Man. of the Merchants Bank, Chicago, offered a prize of 1000 dols. for the best set of plans for a dwelling-house which should be "approximately fireproof." The essential points intended to make the building fireproof are as follows: 1. Fire laws of the City to be complied with. 2. Exterior walls to be hollow from foundation to roof. 3. No furring or lathing allowed on exterior walls. 4. Flue pipes of soft burnt clay to be used. 5. Ceilings to be covered with 1½ inches of concrete. 6. Floors to be protected underneath with 1½ inches of concrete. 7. Roofs to be protected from below with concrete, and from above with tin, slate, or equally fireproof material.

A new plan of Fireproof Building was brought into use in *Chicago* this year; thus described: The outer wall is of 4 in. brick; there is then an open space of 2 in., back of which is a 4 in. wall, which sustains the floors and roof. The joists are painted with fireproof paint. Two inches from the upper edge a heavy cleat is nailed. Boards are then laid in on these cleats, and the space is filled in with concrete 4 in. thick, and on this concrete the tile floor is laid. The roof to be of slate. The stairway is painted with fireproof paint, and can, at small additional cost, be walled in with brick and made completely fireproof. All partitions are of brick. "It has already been demonstrated that such houses can be built for less than 20 p.c. addition to the cost of wooden shanties. This difference can be saved in insurance and fuel in five years, for the houses are very warm. The hollow wall insures dryness, the brick walls and brick partitions warmth and security, the filled floors security and a deadening of noise."

The principle of fireproofing was applied to iron columns as follows: As in the case of the common iron pillars in use, a solid cast-iron column sustains the whole weight of the superstructure; but, in this improved arrangement, there is outside of the solid column a thin cast-iron shell, and the space intervening between the outer shell and the inner column is filled with plaster of paris, the non-conducting properties of which are well known. No weight is allowed to rest on the outer shell or the non-conductor that is used as filling, their only mission being to protect from the effects of heat the real support of the building—the inner column. The plan is to have these columns surmounted by an iron T girder, which is inclosed in a fireproof casting of a similar nature, and the junction between the pillar and the girder is so formed that only the protected portion of the one touches the protected portion of the other, while the casing forms a tight joint, thus making the fireproof armour complete. These columns, it is stated, are intended to take the place of the ordinary iron columns in ornamental fronts of buildings, as well as the interior of large warehouses where such supporters are needed.

The following is a description of the Palace Hotel in San Francisco, completed this year: All the partitions and walls are built of brick or stone, laid in cement and banded together with iron. The hotel itself is of brick and iron, the brick portions being plastered in the colour of sandstone, and the iron painted in the same shade. As an additional protection against fire, a spacious escape stairway has been built from the roof to the ground floor, composed of iron inclosed in brick, having openings in each floor. In every room and passage-way in the hotel is a thermostatic bulb, by which any extra degree of heat existing in any locality will be announced at the general office upon a dial showing the exact locality, thus making a complete fire alarm guard. There are 79 stations in the hotel to be visited every hour, day and night, by watchmen, at each of which is a button which communicates by electricity with the general office, where an indicator is provided under lock. The watchmen are required to touch each of these buttons in their rounds, and if they fail to do so at the proper times the indicator shows it. Within the walls of the building are four ten-inch artesian wells, with a tested capacity of 28,000 gallons of water per hour. These wells communicate with the reservoir under the court, 107 by 64 feet and 20 feet deep, holding 630,000 gallons. There are also engines, steam pumps, and a supply of 14,570 feet of hose, which would seem to be in themselves a sufficient protection against fire.

It appears not improbable that the practice of fire ins. as now conducted has itself rather tended to discourage the efforts in the way of fireproof structures. On this point the *American Builder* offers the following obs.:

> The universality and especially the promiscuousness of ins. render men comparatively indifferent to the personal consequences of fire; and consequences to the public unfortunately do not largely influence the average man. Let us state the case practically. Suppose the reader of this art. were about to erect a building. It is proposed to him to expend, say 5000 dol. in making the building as near fireproof as possible. Would he not at once say: "The int. on 5000 dol. is 350 dol. p.a., in add. to which the taxation arising from the increased value of my property would be something. *Would my ins. be that much less?* No; it will not pay. I will build as my neighbours build. I can always insure my property to within a few thousand dol. of its value. I can afford to run the risk on the difference, which risk will not amount with the cost of ins. to the expense and interest thereon of extra precaution. Besides, my security depends not merely on what I do myself, but on what my neighbours do. Unless I can make my building absolutely fireproof in any event, I shall in case of a great conflagration be no better off than they."
>
> In a business view, all these points are well taken. The ins. system distributes the loss throughout the community, and extra expense on the part of individuals does not bring a corresponding individual benefit. *There seems to be no reason to hope that the building of fireproof structures will become common in this country, so long as we have such effective extinguishers, and such accommodating ins. cos. to protect us from the ravages of the fiery demon.* There is no hope, unless it be in the development of a national conscience.

In the Rep. of the Committee (of the National Board) on the *Origin of Fires*, etc., will be found much that is interesting and valuable bearing upon our present subject.

1876.—In contradiction to much that is stated in this art., the following passages from a recent able art. in the *Ins. Agent*, under the heading of "What will not Burn," deserve consideration:

> The popular impressions as to what will not burn are grossly incorrect. The acute Fire Manager laughs sardonically when he hears of absolute fireproof buildings. He does not believe in them one bit. If his experience has had any duration, he will have had the mortification of paying numerous heavy losses on "the indestructibles"! Those massive stone structures, with the iron girders and stairs, have often bubbled up like great cauldrons, with seething masses of fire lit with costly merchandize, which all the engines of a great city could not allay.
>
> The assertion that this or that will not burn is often enough glibly made. The agent had better at once discard all such notions from his mind. It is almost impossible to say what will not burn, for the history of our great conflagrations includes nearly everything except the Thames, and that has ere now floated with flame.
>
> The fact is, everything will burn if a sufficient body of heat can be generated. The powerful agent which will reduce the native metals is pretty certain to be able to reduce the manufactures of man and the products of the vegetable world. The question then is, of the probability of a fire being kindled, and of its attaining sufficient magnitude to be very destructive. A Manchester goods warehouse will burn as furiously and as conclusively as a theatre or a sugar refinery, if well ignited. But

> there is infinitely less probability of its catching fire, or of the fire speedily making uncontrollable headway. The consequence is, that while the warehouse pays a few shillings p.c. prem., the theatre requires, say, 2 guineas, and the sugar refinery 6 or 7 guineas. . . . All large buildings are more endangered by destructive fire than small buildings, because of the greater chance there exists of an immense and irresistible body of heat being rapidly generated.
>
> If it is impossible to find "What will not burn," it is at least possible to learn by patient observation what is not likely to burn. If it is truly affirmed of any risk that it is very likely to burn, scarcely any reasonable prem. can make it a desirable subject for insurance.

In the *Commercial World* for 15 April is a well-considered art. *On the Construction of Fireproof Buildings.* The author, we believe, is Mr. James George Buckle, a son of the Ed. of that journal.

In N.Y. the adoption of a fireproof material for the partitions of houses is coming much into use. This consists of *blocks of cement.* There are various patents of this useful invention, but the peculiarity of many of them lies in the use of partly-hollow cement or plaster squares, instead of the usual lath-and-plaster divisions. There is by reason of the manner in which these squares are laid no hollow space for the fire to work up in, and no inflammable material in the walls and partitions to consume. Much space is saved, and as two coats of plaster are spared and the lathing, the expense is not materially greater than under the old system. The plaster is laid over these blocks, which are fitted together.

It was, until within the last few years, considered by some of the best authorities that the only fireproof building in Lond. is the Record Office in Fetter Lane. It is built entirely of stone and iron; and its leading feature is that of small rooms, in none of which is supposed to be contained sufficient inflammable matter to interfere with the structure even if the contents were all consumed.

The building of the National Safe Deposit Co., near the Mansion House, completed in 1875, affords now a later development of fireproof construction. Fire-clay is the protecting element here. (See 1874.) The several following art. form part of this subject.

FIREPROOF Dress.—Fireproof dress prob. owes its origin to the brutalities carried on under the designation of religious persecution. The victims of the stake, either on the score of decency (!) or with a refinement of cruelty which aimed at keeping the flames, at least for a time, from direct contact with the more vital parts, were clothed in asbestos shirts. We mention the fact historically, and turn from its contemplation with a shudder.

1825.—The Chevalier Aldini, an Italian physician, invented what he regarded to be a complete fireproof dress. It consisted of 2 vestments, one composed of a thick tissue of asbestos; the other of a metallic cloth of iron wire, covering the first garment, and mounted with a helmet on its upper part. As a substitute for the asbestos robe, might be used a thick substance of woollen stuff, made incombustible by means of a saline solution. A person enveloped in these two garments, it is stated, can withstand the action of flames for some minutes without experiencing any dangerous effects: for the reason that the external metallic tissue "cools the flames," and the internal tissue transmits the heat very slowly on account of the want of conductibility in the substance of which it is composed. Numerous experiments were made; none perhaps of a very practical character.

1829.—Some further experiments were made with the Aldini apparel—this time in Paris, and with a practical end in view; the *Sapeurs Pompiers* or firemen of Paris being concerned. Two piles of thin wood were erected, 10 yards long, 2 yards high, and distant from each other about 1½ yards; these were covered with straw. Two lateral openings allowed the firemen to go out from the flames if they felt compelled to do so. They could also by these means pass readily in and out. Four firemen were selected. Two were clothed with the metallic tissue over asbestos cloth; two with the metallic tissue over a woollen garment rendered incombustible by borax, alum, and phosphate of ammonia. Each man had boots of asbestos, and under the foot a piece of cardboard of that substance. One of them carried on his back a child, 10 years of age, whose head was enveloped in a helmet of asbestos. The firemen penetrated together into the interior of the double pile of flames, and walking slowly, traversed it several times. At the end of 40 seconds, the child inclosed in the basket cried out, so that the man who was carrying him was forced to retire precipitately. They made haste to take out the child, who had in no way suffered: his skin was fresh, and his pulse, which beat 84 before the experiment, was only 96 after it. He had called out simply from feeling the basket in which he was carried slip. The fireman who carried him had before the experiment a pulse of 92, and after it 116. The three others remained in the flames 2 min. and 44 sec., and experienced nothing more than a sharp heat. The pulsations had been 88, 84 and 72 p. min.; they were now 152, 138 and 124. Fresh straw continued to be thrown upon the fire while they were within it, and an inclosure of fire was thus formed, which enveloped their legs and bodies. At a distance of more than 6 yards from the focus of the fire the heat was so intense that none of the numerous assembly of spectators could remain. In some other experiments the firemen were furnished with large shields which enabled them to keep back the flames.

It is in regard to the dresses of females—particularly of actresses and of aged persons—that some simple process of rendering them fireproof is so much needed. The man who shall invent a fireproof starch, suitable for ordinary use, has a large fortune staring him in the face. Experiments are being made.

Regarding *firemen*, as a matter of ordinary practice, coarse woollen clothing, which will not readily take fire, is quite sufficient. If this can be rendered uninflammable cheaply and effectively, so much the better.

1859.—At the Meeting of the Brit. Asso. held at Aberdeen this year, certain experiments were described which had been made by Messrs. Versmann and Oppenheim. It had long been known that cotton and linen fabrics may be partially protected from fire by a solution of alum or of common salt; but the alum weakens the fibres, and the salt makes them hard and crisp—faults which greatly lessen the value of the processes. Experiments showed that borax will exert a considerably preservative effect, as against fire; but the material is weakened thereby. It was next found that phosphate of ammonia exerts a preservative effect without that of weakening; but it presented a new difficulty: the salt becomes decomposed under the heat of the laundress's iron. Sulphate of ammonia—only one-fourth the price of phosphate—was next tried; it had most of the merits, and the one defect of its predecessor. Tungstate of soda was next tried, and found to be a salt which, in solution, imparts a considerable degree of non-inflammability to textile or woven fabrics, without weakening them, or rendering them harsh or stiff; and also without liability of having the preservative properties removed by heat or washing.

Later experiments have been tried. The last-named inventors have come to the conclusion that the cheap sulphate of ammonia will suffice in factories, on general woven goods; but the tungstate of soda is better for domestic use, where the fabric is likely to be afterwards ironed.

Still more recently M. Carteron, of Paris, has announced an invention which will render silk, as well as cotton and linen fabrics, incombustible. The details of the method are not pub.

1867.—M. Champy, a Lieut. in the French Navy, exhibited at Billancourt this year a dress, in which he was stated to be enabled to approach the centre of any conflagration in view of saving life, or for any other necessary purpose. The principle was to have the dress continually saturated with water. The practice was accomplished thus: the operator placed over his head a conical woollen hood, with eye-pieces; dressed himself in woollen garments and gloves; fastened a strong belt round his waist, from which depended the branch in connexion with a fire engine; and a tube with a stop-cock, by means of which he could saturate the conical cap and all the rest of his equipment. At a trial consisting of some faggots saturated with benzine, he walked boldly up, and extinguished the fire without difficulty. In practice, we do not quite see how the connecting hose could be kept attached: as, for instance, in walking through the passages and rooms of a house.

1872.—A pamph. was pub. in *Vienna* this year, under the title *Protection against Fire.* Its author discusses in a clear and thorough manner, first, the process by which combustion takes place in different kinds of material; for example, in linen, cotton, wool, etc. He then examines carefully the means which have been hitherto tried for preventing or checking combustion. He considers the liquid glass which was long ago recommended by Fuchs, the tungstic acid proposed by Versmann and Oppenheim—the only objection to which consists in its expensiveness—and further examines into the merits of alum, vitriol, borax, sulphate of magnesia, sal-ammoniac, and other substances which have been regarded as incombustible. He finally arrives at the consideration of a substance discovered by himself, which he thinks is possessed of all the qualities needed as a protective agent against fire, and which is at the same time cheap and easily obtainable. The thinnest possible solution of it is efficacious, and it does not render any woven fabric to which it may be applied stiff or heavy. It does not injure colours, has no odor, and is neither corrosive nor poisonous. It is a mixture of borax and sulphate of magnesia. Its efficacy results from the formation of boracic acid magnesia, which is insoluble in either cold or hot water. This acid completely envelops the threads of a fabric, and by that means obstructs the development of inflammable gas, and renders the spreading of flame extremely difficult. Borax and sulphate of magnesia are mingled in the proportion of 4 ounces of one to 3 ounces of the other. Seven ounces of the combination, freshly mixed, are dissolved in 20 or 30 ounces of warm water, and the stuff which is to be impregnated is dipped in the solution. The stuff is then wrung out and dried, and, if necessary, ironed. Another preventive agent, which is almost equally efficient, is a mixture of sulphuric acid and ammoniac with gypsum.

Mr. Nicoll exhibited at the International Exhibition a starch prepared with tungstate of soda as its base.

1875.—In Jan. this year Capt. Shaw read a paper before the So. of Arts: *Appliances for enabling Persons to Breathe in Dense Smoke or Poisonous Vapours*, from which some of the preceding details have been drawn. He speaks of fireproof clothing in regard to firemen as being "rather a matter of scientific interest than of practical usefulness." [Firemen's Respirators.] [Fires, Deaths Caused by.]

FIREPROOF Furniture.—In the event of timber, and of cotton, woollen, and silk fabrics being rendered fireproof, furniture will become fireproof as a matter of course. It was reported that experiments were being made in this direction at the instance of a German Ins. Co. in 1870. [Fireproof Timber.]

FIREPROOF Paint.—About 1824 there was projected the *Patent Fireproof Paint Asso.*

It was to have a cap. of £50,000, in 2000 shares of £25. A prosp. was issued, which stated:

> A patent has been obtained for a composition which effectually prevents the most combustible substances taking fire: such as wood, cloth, paper, and even straw. It may be applied as common paint to all houses, warehouses, granaries, sugar refineries and manufactories of every description.
>
> Experiments have been submitted to men of science and respectability, before whom it was proved that any substance being covered with this paint does not ignite, although submitted to the most intense fire.

Hence the directors thought it "an imperious duty" to submit the scheme to the public, feeling "just exultation" that the horror which constant conflagrations excite might now be greatly diminished, if not entirely removed. The public did not feel the imperious duty of subscribing, so we hear no more of the project at that time.

1856.—About this date was invented Blake's Fireproof Paint, which it was stated makes a beautiful floor; becoming as hard as marble, and being both fire and waterproof.

M. Sieburger has suggested the following as an effective protection against fire: Two coats of a thin hot solution of glue; then paint with a thicker solution of glue, and dredge with a finely pulverized mixture of one part sulphur, one part ochre or pipeclay, and six parts sulphate of iron (green vitriol). Another recipe gives directions to paint the wood with a hot mixture consisting of three parts of a saturated solution of alum and one part of a saturated solution of sulphate of iron, and when dry to paint with a weak solution of sulphate of iron in which pipeclay is mixed to the consistency of paint.

1873.—Gline's "Patent Slate Roofing Paint" was introduced in the U.S. this year, and, "having been tested in the most thorough manner, is found to be practically fireproof, and totally impervious to water. It is easily applied to wood, tin, iron or felt roofs, and besides rendering them fire and waterproof, prolongs their usefulness to an immensely extended period."

1875.—A French scientific journal says that, of the score of fireproof compositions that have been brought forward within as many years past, there is scarcely one that possesses superior or even equal adaptation to the purpose, to the following: Dissolve in cold water as much pearl-ash as it is capable of holding in solution, and wash or daub with it all the boards, wainscoting, timber, etc.; then, diluting the same liquid with a little water, add to it such a portion of fine yellow clay as will make the mixture of the consistency of common paint, and then stir in a small quantity of paper-hangers' flour paste to combine both the other substances. Give three coats of this mixture, and when dry, apply the following composition: Put into a pot equal quantities of finely pulverized iron filings, brick dust and ashes, pour over them size or glue water, set the whole near a fire, and, when warm, stir them well together. With this liquid composition, or size, give one coat, and on its getting dry give it a second coat. It resists fire for five hours, and prevents the wood from ever bursting into flames: that is, it so resists the ravages of fire as, at most, only to be reduced to coals or embers, without spreading the conflagration by additional flames. It is found that a quantity equal to 20 lbs. of finely sifted yellow clay, 1½ lb. of flour for making the paste, and 1 lb. of pearl-ash, is sufficient to prepare a square rood [? rod] of deal boards.

FIREFROOF Paper.—An English inventor secured (1874) letters patent for an incombustible paper and fireproof ink. Though the paper is not regarded as absolutely indestructible by fire of any degree of fierceness, it is yet claimed that, under such circumstances as fires in houses, factories, or other buildings, it is "ordinarily incombustible." The pulp, which is manufactured in the usual way, is composed of vegetable fibre one part; asbestos two parts; borax one-tenth part; and alum two-tenths part. These ingredients, having been previously ground and finely divided, are brought to the consistency of pulp by the addition of water in proper proportions. Not only can writing paper be thus manufactured, but a coarser substance, for the binding of books or the inclosing of manuscripts. The fireproof ink can be used either in writing or printing, and is made to the following receipt: Graphite, finely ground, twenty-two drachms; copal, or other resinous gum, twelve grains; sulphate of iron, two drachms; tincture of nutgalls, two drachms; and sulphate of indigo, eight drachms. These substances are thoroughly mixed and boiled in water, and the ink thus obtained is said to be both fireproof and insoluble in water. When any other colour but black is desired, the graphite is replaced by an earthy mineral pigment of the desired colour.

FIREPROOF Roofs.—These have been considered under Fireproof Buildings.

FIREPROOF Shutters.—The subject of Fireproof Shutters has long engaged the attention of Fire Underwriters. They are important from a double point of view—they not only protect buildings from the risk of fire from without; but in the event of fire within, they lessen the draft, and keep the flames from extending to neighbouring unprotected properties.

One principle is now estab., and this is that the shutters should open from the outside: the Fire Brigade in this way can frequently reach a fire directly without creating a draft in the building by the opening of doors, etc. Another obvious condition, in view of the preceding, is that some instantaneous means of opening the shutters when desired should be possessed by the Fire Brigade. This involves some difficulties, moral and physical, which have still to be overcome. Serious fire losses constantly occur from want of ready means of access from without.

1874.—Early this year a series of experiments with patent fireproof shutters took place at Boston, U.S., under the supervision of Prof. John M. Ordway, of the Inst. of Technology. A brick building was erected in sections, and windows placed on one side, to the casings of which were attached the shutters. The shutters tried were the Perkins patent; an old shutter, with an air draft between the inner and outer metal plates; the Berlin, Connecticut, corrugated metal shutter, and the Leahey Salamander, Ne Plus Ultra, and Combination shutters. The Leahey shutter is composed of wood between iron sides. The Ne Plus Ultra is just the reverse, wood on both sides of the iron. The Combination shutter is a sheet-iron shutter on the outside, but a tin reflector on the inside. The Salamander is a sheet-iron shutter, filled with some light composition. The shutters were subjected to an intense heat for about an hour and a half. In all cases the casings were more or less charred. The heat to which the shutters were subjected was much stronger than they would have to bear in an ordinary fire. A large number of firemen and members of the Underwriters' Union were present. Other experiments were to be made. In the whole, 31 different kinds of shutters were experimented upon. Shutters made of non-heat-conducting substances would alone stand the required test. [See FIREPROOF BUILDINGS, 1874.]

The New York Building Act, 1874, contains the following clause:

> All stores, or storehouses, or other buildings which are more than 2 stories, or above 25 feet in height above the curb level, already erected, or that may hereafter be built in the said city, except dwelling-houses, school-houses, or churches, shall have doors, blinds, or shutters, made of fireproof metal, on every window or entrance above the first story. When in any such building the shutters, blinds or doors cannot be put on the outside of such door or window, they shall be put on in the inside, and if placed on the inside, shall be hung upon an iron frame independent of the woodwork of the window frames or door; and every such door, blind, or shutter shall be closed on the completion of the bus. of each day, by the occupant having the use or control of the same; and all fireproof shutters or blinds that now are or may hereafter be put upon the front or sides of any building on the street-fronts must be so constructed that they can be closed and opened from the outside above the first story.

See FIRE LADDERS; and FIRE PROTECTION.

FIREPROOF TIMBER.—The first attempts at making timber fireproof of which we have any knowledge date back to the period of the wars between the ancient Greeks and the Romans. We have noticed the subject under FIREPROOF BUILDINGS. It is prob. only within a comparatively recent period that serious attempts have been made to render timber, to be employed in the ordinary processes of building, fireproof. We shall briefly review these modern attempts. Some of these have been incidentally noticed under FIREPROOF BUILDINGS, and some other heads.

1768.—Humphrey Jackson's process, patented this year, consisted in the application of a solution of salts of zinc and ammonia to the hardening of wood, and rendering it flexible and tough; also preserving wood from decay, particularly oak and elm planks. The fireproof qualities imparted were not made a feature in the patent.

1792.—During this year public experiments were made to prove that wood and similar materials might be made incombustible by fire.

1856.—Mr. E. Konklin, of *Cincinnati*, suggested in the *Scientific American*, the kyanizing of all timber to be used for buildings, so as to render them more fireproof. He believes that the extra cost of preparing building timber, joists, planks, boards, etc., by kyanizing them, would soon be saved in decreased expenses for ins. A good fireproofing solution for timber is equal parts of alum and sulphate of copper dissolved in water at the rate of two pounds of these substances to 40 cubic feet of water.

1857.—Mr. Abel, Chemist to the War Department, and Mr. Hay, Chemist to the Admiralty, this year made experiments regarding the efficacy of silicate of soda in rendering wood incombustible. A wooden hut similar to those originally existing in Aldershot Camp was constructed on Woolwich Marshes. Its immediate purpose was to test Phillips's Fire Annihilator; but advantage was taken to try the experiment now under notice. The officers of the Royal Engineers suggested, that if a part of the hut were treated with silicate of soda, and other parts differently, means of comparison would be afforded. This was done. One portion of the hut was painted inside and out with a mixture of lime and alum. This was not found to act as a sufficient protector against fire. Another portion was painted three times, inside and out, with a solution of silicate of soda. Unfortunately for the fairness of the experiment, the building was constructed with a double boarding, so that it was only possible to coat or impregnate each plank on one side. Nevertheless the value of the silicate was estab. beyond a doubt. A large heap of shavings was lighted in the interior of the hut, against the coated portion of the woodwork. The flame played fiercely against the timber for some minutes, but only succeeded in kindling the edge of one plank; and even that did not blaze, but only smouldered for a short time. By the heat of the fire, the salt was drawn to the surface of the wood, and fused, forming a glaze upon it. Subsequently, when the whole hut was destroyed—after unsuccessful attempts made to extinguish it by the Annihilator—although the fierceness of the flame was such that few materials could have withstood it, yet several planks remained of the exterior coated portion. Upon examining these planks, the unprotected surfaces were found to be completely charred; but this charring extended only to those parts which had not been touched by the silicate. —*English Cyclopædia.*

1870.—A German chemist—acting it was stated under a commission from a fire ins. co.—discovered that impregnation with a concentrated solution of rock-salt rendered timber fireproof.

1873.—The So. of Arts offered the Fothergill Gold Medal "for the economic production of uninflammable wood, so as to render buildings in which it is employed less destructible by fire." We believe that the medal has not yet been claimed. [FIRE PROTECTION.]

1874.—The Rev. Dr. Jones, the Principal of Harewood College, Tavistock, took out a patent for rendering wood uninflammable, and also impervious to dry rot and decay, by subjecting it to a "pickling" process in a solution of tungstate of soda and water of the specific gravity of 1·2. The tungstate is made by the addition of tungstate of lime to hydrochloric acid and salt, and it was said to produce in the process as much chloride of lime as will pay all working expenses. The invention claims to be superior to all the old methods of preserving wood. The tungstate of soda, from experiments that have been made publicly and privately during the last three years, is proved to render soft woods, such as white and yellow pine, as hard as oak or teak, and it will also restore wood to its original condition of durability that has been affected by dry rot.

Experiments regarding this process were tried in August this year at the Priory, Tandridge, near Godstone. These were three in number, and the tests were very severe. Two small pyramids of sticks were made, one of prepared, and the other of unprepared wood. These were then well saturated with paraffin, and ignited. In the case of the prepared wood the paraffin soon burnt itself out without communicating the flames to the wood, which was only slightly charred. The other heap burnt fiercely, and in half an hour was reduced to ashes. The next experiment was made with two wooden huts, one of which had been prepared, while the other, built of ordinary Scotch fir, had not. A strong fire sufficient to ignite the houses was burnt in each, and the effect was about the same as in the preceding experiment. A chest containing a parchment document had been treated by the process, and was thrown into the flames when at their height, and was taken out some time afterwards charred indeed as to the outside, but practically uninjured in any other respect. The inside was quite cool, and the wax seals upon the document were intact. The most conclusive trial was that which took place with gunpowder. A Government gunpowder keg which had been rendered fireproof was used for this experiment. A paper packet, containing about two ounces of gunpowder, was put in the bottom of the keg, and a sheet of brown paper impregnated with the tungstate was pasted over it, and dried. The keg, which was open at the top, was turned upside down, and surrounded by shavings, which were lighted. A fire of petroleum and shavings was kept burning on the top for about a quarter of an hour without producing the slightest effect on the keg. To make the trial still more complete, the keg was reversed again, and lighted shavings were thrown in upon the gunpowder, protected only by a sheet of brown paper. The paper stood the test admirably, and the solution rejected the fire so thoroughly that the paper did not even show a sign of charring. The gunpowder was then taken out and exploded. The properties of his invention, Dr. Jones states, will render to the navy the advantage of being always sound in hull and free from any danger of fire, whether from accident or shot and shell. The visitors were shown a piece of restored oak taken from the *Lord Clyde*, an ironclad that was built some years ago of unseasoned timber, and which had become soft and useless. Having been treated with Dr. Jones's patent, it is now as hard and durable as ever.

An extract from some Government statistics was read, which stated that the cost of the renewal of telegraph poles was £240,000 p.a., and this, it was said, would be saved by the use of Dr. Jones's process.

Further experiments were to be made in regard to the general applicability of the process to timber ships.

1875.—Further experiments were made, this time at the Chain Testing Works, Birkenhead, regarding the rendering of wood uninflammable, as also impervious to atmospheric influences, by immersing it in a solution of tungstate of soda. Samples of wood which had been immersed in the solution were subjected to several tests. One of them was to place a piece 1—2 in. thick in the flame of a gas jet, and keep it there for 35 minutes. When taken out, it was found to be only slightly charred to the extent of one-sixth part of it, and to have no flame upon it. A piece of ordinary wood was placed in the flame, and was entirely consumed in less than ten minntes. About 40 or 50 pieces of the prepared wood were soaked in petroleum, and then set fire to, when it was found that as soon as the petroleum had burned itself out, the flame died away, and the wood was scarcely injured at all. Another lot of similar wood, which had not been prepared by the new process, was destroyed in a very short time. The inventor subjected a piece of prepared wood to the action of oxygen gas, which was found to have very little effect upon it, whereas a piece of common wood was completely destroyed in a short time.

The tungstate is made in this country from the wolfram, found mixed with the tin-ores in Cornwall, and the cost, on anything like a large scale, is very small. It can also be made from the tungstate of lime, which exists even more abundantly than wolfram, and a waste product obtained in this case, viz. chloride of lime, would, it is stated, pay almost the whole cost of the manufacture.

Herr Pelag Werne, a German chemist in Philadelphia, has discovered a compound for preserving wood from fire, which is designed to enter and fill up all the pores of the wood. Letters patent have been issued for this compound. Small splinters cut from the heart of wood prepared by Mr. Werne's process failed to burn when put in a flame of gas, although they were consumed by the heat to which they were subjected. The wood if thrown into a hot fire and withdrawn will be charred, but will carry no spark. It may be destroyed by fire, but cannot be ignited. It is proposed that lumber shall be prepared by this process and worked up by the carpenter or builder afterwards. The process requires that the wood shall be immersed in a boiling solution for several hours until it is thoroughly impregnated, and then dried. The cost of the preparation where only small quantities of wood are treated at a time is estimated at half a cent a square foot for one-inch plank. This cost might be reduced in practical operations, but if not, it would add from 10 to 20 p.c. to the costof lumber ordinarily used in dwelling-houses.

1876.—M. P. Folacci has devised a new mode of rendering wood waterproof and incombustible, which involves the use of the following composition: Sulphate of zinc, 55 lbs.; American potash, 22 lbs.; alum (ammonia base), 44 lbs.; oxide of manganese, 22 lbs.: sulphuric acid at 60°, 22 lbs.; river water, 55 lbs. The above ingredients, with the exception of the sulphuric acid, are mixed in a boiler, where the water is added at a temperature of 113° Fah. As soon as solution is effected, the acid is gradually poured in. To prepare the wood, the timbers are placed in a suitable chamber, on gratings, and separated by spaces of about a quarter of an inch. The composition is then pumped in to fill completely the receptacle, and is maintained therein in a state of ebullition for three hours. The wood is then withdrawn, and dried in the air. According to the inventor, it becomes practically petrified, and the most intense flame only carbonizes the surface very slowly.—*Baltimore Underwriter.*

There are at least two other patents for rendering wood incombustible, of which we have not the details.—1. *Saloman's Process*, which consists of a peculiar application of two solutions to the surface of wood: the first consisting of sulphate of alumina, glue and water, and the second of chloride of calcium, glue and water. 2. *Maugham's Process*, by which dry wood is saturated with an aqueous solution of phosphate of soda and muriate or sulphate of ammonia: the theory being that a decomposition will ensue, followed by an evolution of ammoniacal vapour, and the formation of an incombustible coating on the surface of the wood.

FIRE PROTECTION.—The subject of Fire Protection is a large one, involving many considerations. It embraces in the first place efforts at prevention, such as are manifested in the BUILDING ACTS, under which the object sought is so to construct buildings as to render them as far as possible incombustible. It embraces next questions of EXTINGUISHMENT: for as fires do take place notwithstanding all efforts made for prevention, the maintenance of efficient Fire Brigades, and all appliances necessary for their subjection, is a matter of vital importance. Under this last head we reach the consideration of WATER SUPPLY. If this be not sufficient, and readily available, Fire Brigades, however well equipped, are in effect powerless. Then it is clear that buildings may be constructed with the greatest care, and yet if stored with combustible products, or occupied for the carrying on of dangerous trades and manufactures, the safety, not only of such buildings, but of the entire neighbourhood in which they are situated, may be endangered: hence we have to review all statutory limitations regarding these matters. Finally, the element of moral hazard has to be regarded. Persons cause fires either wilfully or through gross negligence; and the law has to impose punishments and penalties in regard to such crimes.

Some of the questions here involved have already received consideration, more or less ample. For instance, under FIRE EXTINGUISHMENT, we have already dealt with the varied appliances for limiting the extent of Fires, embracing therein some considerations on the subject of WATER SUPPLY. Under DANGEROUS TRADES; EXPLOSIONS; and EXPLOSIVE SUBSTANCES, we have already disposed of a class of risks which in late years have become accountable for many serious fires. While under FIRE INQUESTS; FIRES CAUSED BY NEGLIGENCE; and FIRES CAUSED WILFULLY, other branches of the subject have been or will be fully reviewed. There still remains a great deal to be said on the general and important subject of Fire Protection; and it is the purpose of the present art. to present this in a readable and instructive form.

We observe, that in the ancient Hindu Law there is a particular charge to the magistrate to forbid all fires in the month of Cheyt, or part of March and April. This is a provision most wisely applicable to the climate of Hindustan, and we shall speak more at large concerning it under INDIA.

We know that the ancient Romans, and we believe also the Greeks, had most stringent laws regarding protection against Fire; and the causing of wilful fires was proclaimed as a crime punishable with *death!* [FIRES CAUSED WILFULLY.]

The Emperor Augustus, who wore the purple at the time of the birth of our Saviour, appointed 7 bands of Firemen in the Imperial City, each of which had the care of 2 divisions (*regiones*); each band had a captain (*tribunus*); and at the head of the whole body was the prefect of the watch (*Præfectus Vigilum.*)

The word *Hamis*, in the 14th Satire of Juvenal, is described by Facciolati as a vessel used in putting out fires:

> " Dispositis prædives *hamis* vigilare cohortem
> Servorum noctu Licinus jubet, attonitus pro
> Electro, signisque suis, Phrigiàque columniâ
> Atque ebore, et latâ testudine;"

which, freely translated, may be rendered thus:—"The opulent Licinus bids his train of servants watch by night, the water-buckets being set ready—alarmed for his amber, and statues, and his Phrygian column, and his ivory and broad tortoise-shell."

872.—All dwelling-houses and buildings in Great Britain—after the Roman occupation—down to the time of Alfred the Great were built of timber, generally with a reed thatch. Alfred began to build his palaces of brick and stone; but the nobles did not follow the example for several centuries later.

This monarch ordered the inhabitants of Oxford to cover up their fires every night at the ringing of the bell at "Curfew." The fires being then open upon the hearths, an instrument of iron or copper was specially devised for the purpose.

900.—About this date Pope John IX. ordered bells to be used in churches, as a defence, by ringing them, *against thunder and lightning!* Du Fresnoy informs us that they were anointed and baptized in view of their holy office. They were also consecrated with most imposing ceremonies, being washed inside and outside with holy water, holy oil, etc. And it has been inferred, rather than directly asserted, that the ringing of such bells at nightfall was to be regarded as a religious offering for protection against fire during the hours of darkness. The Curfew Bell was not improbably associated with this belief.

1066.—William the Conqueror ascended the throne of Gt. Britain, and very speedily made general in this country the continental custom of the "Curfew [*couvre feu*] Bell,"—which was rung at 8 o'clock, when all fires and lights had to be extinguished, under a severe penalty,—perhaps as much as a measure of good government as a protection against fire; but the latter was the plea. Some of our historians appear to regard the measure as aimed at the liberty of the subject, and speak of its introduction as the "odious tyranny of the Conqueror." It is certain that the practice prevailed generally in the cities of Europe at this date, and in many of the English cities, which latter required measures of protection quite as much as any continental city. We regard it as clearly estab. now that the practice had been introduced into England by Alfred, or prob. earlier.

1100.—The practice of the Curfew is said to have been abolished—that is prob. the fines and penalties attaching thereto. The practice of ringing the 8 o'clock bell continued for many centuries later in various towns in Eng.; and in some parishes is not even now extinct. [CURFEW BELL.]

1136.—At this date the greater part of the City was still built of wood, and the houses were covered with straw, stubble and the like. Hence it happened that when a single house caught fire, the entire City was endangered. The *Liber Albus*, which all who know its hist. regard as of great authority, says: "A thing that took place in the first year of the reign of King Stephen [1136], when by reason of a fire that broke out at London Bridge the Church of St. Paul was burnt; from which spot the conflagration extended, destroying houses and buildings, as far as the Church of St. Clement Danes." After this, continues the Chronicle, the citizens, to the best of their ability, to avoid such a peril, built stone houses upon their foundations, covered with thick tiles, and so protected against the fury of the flames; whence it has often been the case that when a fire has broken out in the City, and has destroyed many buildings, upon reaching such houses it has been unable to go further, and has there been extinguished.

1189.—The first reference we find to any regulations for fire prevention in the City occurs this year, reign of Richard I. It was this monarch who appointed the first Lord Mayor of London; and this first Lord Mayor, Henry Fitz-Alwin, goldsmith, issued an order (this year) "concerning buildings between neighbours." The party-wall was to be at least 16ft. in height and 3ft. in breadth, and was to be built of stone, "for security against fire." These walls, as well as gutters, to receive and convey the water from their houses, were to be provided at the common cost. Also "concerning digging pits for water."—*Stow's Chronicle.* Anderson says the order was that "no houses should be built within the City but of stone;" and that they "should be covered with slate or burnt tile."

The good example here indicated was taken up warmly, and we find it recorded that in the same year the wardmotes of the City arranged the following rules for preventing loss of life and destruction of property by fire:—

Item.—That all persons who dwell in great houses within the ward have a ladder or two ready and prepared to succour their neighbours in case misadventure should occur from fire.

Item.—That all persons who occupy such houses have in summer time, and especially between the Feast of Pentecost and the Feast of St. Bartholomew (Aug. 24), before their doors a barrel full of water for quenching such fire, if it be not a house which has a fountain of its own.

Item.—That ten reputable men of the ward, with the aldermen, provide a strong crook of iron with a wooden handle, together with two chains and two strong cords, and that the handle have a good horn and loudly sounding. Of persons wandering by night, it is forbidden that any persons shall be so daring as to be found wandering about the streets of the City after the Curfew rung out at St. Martin's-le-Grand and St. Lawrence, upon pain of being arrested.

This may be regarded as the first *Fire Ordinance* of the City of Lond. (See 1667.)

1246.—An Ordinance "previously issued" [? 1189] was renewed to the effect that all houses within the City should be covered with tiles or slates instead of straw, more especially such as stood contiguous to the best streets, which were then but few. What is now the heart of the City about Cheapside was then a void place called Crownfield, from the Crown Inn there; the bulk of the City lay more eastward.—*Anderson.*

1268.—A night-watch for the City of London was first appointed.

1285.—In this the 13th year of Edward I. an Act was passed against incendiaries, and night watchmen were ordered to be appointed in every town and city, between sunset and sunrise.

1302.—The first recorded instance of any steps being taken towards enforcing any of the measures of protection herein referred to occurred this year; and the following account of the same is still preserved in the records of the City as follows: Thomas Bat came before John le Blund, Mayor of Lond., and the aldermen, on the Friday next before the Feast of St. Hilary (13th Jan), in the 30th year of the reign of King Edward, son of King Henry, and bound himself, and all his rents, lands, and tenements, to keep the City of Lond. indemnified from peril of fire, and other losses which might arise from his houses covered with ***thatch***, in the parish of St. Laurence, Candelwyk Strete; and he agreed that he would have the said houses covered with tiles about the Feast of Pentecost then next ensuing; and in case he should not do the same, he granted that the Mayor, Sheriffs, and Bailiffs of Lond. should cause the said houses to be roofed with tiles out of the issues of his rents aforesaid.—*Memorials of Lond.*

1351.—In many of the cities and large towns on the Continent it had long been the custom to place a watchman on the top of a large building or tower, to look out for fires, notice of which is conveyed by blowing a horn, firing a gun, or ringing a bell. In *Germany* a Police Ordinance which had previously existed was renewed this year; and it required that two watchmen should be posted in each steeple to look out for fires. The mode of indicating the direction of the fire is by holding out a flag towards it in the day, and a lanthorn at night. [FIRE OBSERVATORIES.]

1371.—The first police regulations regarding fires were made in *Paris*. Each householder was to put a hogshead of water at his door under a penalty of 10 sous. [For later regulations see PARIS.]

1400.—In *Leipsic*, at this date, the town piper resided in apartments in the steeple, and took part in the fire-watch.

1467.—The *Ordinance of Worcester* of this date provides as follows:

XV. Also that the Bitters [Bucket Carriers] be redy w^t hur horses and bittes [flagons] to brynge water vnto euery citezen, when he ys required by eny man or child when eny parelle of fuyre ys w^{t}yn the cite, in peyne of lesynge of xl.*d.*, to the Baillies half, and the other half to the comyn tresour. . . .

XXV. Also, that ther be v. fuyre hokes to drawe at euery thynge wher paryle of fuyre ys in eny parte of the cite; and they to be sette in iij. parties of the cite. And grete helpe and nede be that god defende. And the same hokes to be made by the chamberleyns.

XXVI. Also, that no chymyneys of Tymber be suffred, ne thacched houses w^{t}yn the Cyte, but the owners do hem awey, and make them chymyneys of Stone or Bryke, by mydsomer day next commynge, and tyle the thacched houses by the seid day, in peyn of lesynge of a noble. And aft^r that day, euery half yere a noble tylle it be done, to be payde to the comyn treso^r.

1472.—Reign of Edward IV., a night bellman was employed in *Exeter* to alarm the inhabitants in case of fire.

1556.—Reign of Mary, bellmen were first appointed in London. They were to ring their bells at night, and call out, "Take care of your fire and candle; be charitable to the poor; and pray for the dead."

1583.—Reign of Eliz., Fleetwood, the Recorder of Lond., in a famous speech regarding the power of the Sovereign to prevent the growth and extension of the City, said: "In London Houses are to be pulled down with Engines, Hooks and Ladders, provided for that purpose, and this is by the Common Laws of the Realm. And this is for avoiding of the Rage of Fire. . . . By the law no man may build or make a Reredorse for the Fire of Charcoals in any House. . . . Tallow chaundlers may not melt their Tallow in their own dwelling-houses. . . . Flaxwives for fear of Fire . . are inhibited."—*Stow.*

1605.—James I. issued a proclamation similar to those issued by Elizabeth [LONDON] against new buildings in the City, or within one mile thereof; and he also commanded "all persons henceforwards to build their forefronts and windows either of brick or stone, as well for decency, as by reason all great and well-grown woods were much spent and wasted ; so as timber for shipping waxed scarce."—*Stow*. This Proclamation is said to have had little effect.

1607.—Proclamation was again made for the same purpose ; and some were censured in the *Star Chamber* for building contrary to the tenor of the Proclamation.

1614.—By a further Proclamation, all Commissioners were required to proceed with strictness against all offenders in this sort. From this time, says Stow, began the new Reformation of Building. So rare appears to have been a good building at that period, that this old Chronicler deems it necessary to record the first few good houses that were built in London. The first house of note thus built was a house in the *Strand* belonging to Colonel Cecil ; after that a house near Drapers' Hall ; next to that a goldsmith's house in Cheapside, over against Saddlers' Hall, and a leather-seller's house in St. Paul's Churchyard, near the North Gate, who was compelled thereunto, after he had set up his house, being all of timber. [Book 1, p. 7.]

1637.—Charles I., through the Lords of the Council, drew the attention of the Lord Mayor to the valuable services rendered by fire engines, and to their scarcity in the City; also recommending that more "frequent provision bee made of them." This letter we have set out in detail under FIRE ENGINES, MANUAL, at this date.

1638.—In a memorial of Sir William Beecher "of such business as were treated of in this month by the [Privy] Council and remained yet imperfect," was : Letter to the Lord Mayor for more frequent provision of engines to shoot water for quenching fires. The Lords intimated that they would take order for *like provision in the parishes out of the City liberties.*

In the petition to Charles I. presented this year by Wm. Ryley and Edward Mabb, as set out in detail in our art. FIRE INS., HISTORY OF, under this date, praying for leave to estab. a scheme of Fire Ins., it was stated to be part of that scheme to "keep a continual watch in all parts of the Citty and suburbs all night, that if any fire should break forth it may presently be espied." And engines were to be kept in every ward "to be ready at hand for quenching of the same, and the watch brought speedily to the fire." "Reserves of water shall be made in convenient places for sudden use."

1643.—There was printed in one sheet the following: "*Seasonable advice for preventing the mischief of Fire, that may come by negligence, treason, or otherwise:* Ordered to be printed by the Lord Mayor of London ; and it is thought very necessary to hang in every man's house, especially in these dangerous times. Invented by William Gosling, Engineer. How many several ways, houses, towns, and cities have been set on fire." Then follows a list of causes of fires, which were the same then as now, winding up with "Some by warm sea-coal cinders put in baskets, or wooden things as did burn London Bridge : and some have been burnt without fire or candle, as by wet hay, corn, straw, or by mill-wheels, or such like ; all which hath been by carelessness : and some have been fired of purpose, by villainy or treason." Then follows: Orders to be observed that fire may not happen, and : Orders that if fire should happen either by wild-fire or otherwise, to prevent the miseries thereof. Printed for H. B. at the Castle in Cornhill.—*Harleian Miscellany*, vol. v.

1650.—We have already spoken of the value of the early fire engines in regard to Fire Protection. These were manuals ; but we appear to have had a narrow escape of having a Steam Fire Engine at this date. We have also spoken [FIRE ENGINES, MANUAL] of the Marquis of Worcester's famous engine, which we had taken to be a manual only ; but Lord Macaulay gives us another view :

> The Marquis of Worcester had recently observed the expansive power of moisture rarefied by heat. After many experiments he had succeeded in constructing a rude *steam engine*, which he called a fire water-work, and which he pronounced to be an admirable and most forcible instrument of propulsion. *But the Marquis was suspected to be a madman, and known to be a Papist. His invention therefore found no favourable reception.*—Hist. of Eng. vol. i. ch. iii.

1660.—In the case of *Manby* v. *Scott*, before the Court of King's Bench this year, the principle referred to by Recorder Fleetwood in 1583 is directly affirmed. The judges laid it down that the law of necessity dispenses with things which otherwise are not lawful to be done : "as to throw down any neighbour's house for preventing the spread of fire," etc., etc.

1666.—**Great Fire of London.** In view of preventing the further spread of this fire, the Lord Mayor ordered the destruction of buildings at certain points by means of gunpowder. The practice has been resorted to from time to time since. The peculiar incidents which arise out of the practice are stated under DESTRUCTION OF BUILDINGS TO STOP FIRE.

1667.—The incident of the preceding year led to the passing of the three following important measures.

1. An Act of the Imperial Parl.—19 Car. II. c. 3—"*An Act for Rebuilding the City of London.*" Its preamble sets forth that, "Forasmuch as the City of London, being the Imperial seat of his Majesty's Kingdoms, and renowned for trade and commerce throughout the world ; by reason of a most dreadful fire lately happening therein, was for the most part thereof burnt down and destroyed within the compass of a few days, and now lies buried in its own ruins : For the speedy restauration whereof, and for the better regulation, uniformity and gracefulness of such new buildings as shall be erected

for habitations in order thereunto, and to the end that great and outrageous fires (through the blessing of Almighty God) so far forth as human providence (with submission to the Divine pleasure) can foresee, may be reasonably prevented or obviated for the time to come, both by the matter and form of such building: And further to the intent that all encouragement and expedition may be given unto, and all impediments and obstructions that may retard or protract the undertaking or carrying on a work so necessary, and of so great honour and importance to His Majesty and this Kingdom, and to the rest of His Majesty's Kingdoms and Dominions may be removed." Be it therefore enacted, etc.

Then follow the provisions, some of which we shall briefly notice: No dwelling-house to be erected except of such materials as are specified in the Schedule of the Act. There shall be four sorts of buildings only, "and no more." The first and least sort of houses fronting by-lanes; the second sort fronting streets and lanes of note; the third fronting high and principal streets; the fourth and largest sort, mansion-houses for citizens, or other persons of extraordinary quality, not fronting either of the three former ways.

The Lord Mayor and Common Council to declare which should be streets, which lanes, etc. All houses to be rebuilt within three years. Brick, stone, and oak to be used. Foreigners might work as freemen in rebuilding City. Noysome trades prohibited in the high streets. Conduits to be removed from high streets. *Passages less than fourteen feet wide to be made larger*; and certain streets to be enlarged. The 2nd September appointed a day of humiliation in the City "yearly and for ever." A pillar to be set up in memory of the fire. [MONUMENT, THE.] A Thames Embankment forty feet wide to be constructed from Tower Wharf to London Bridge, and from thence to the Temple Stairs. A duty of one shilling per ton imposed on coals to enable the Mayor and Corporation to carry out the works named in the Act. There was a special exemption, "that Mr. Thomas Morris, his Water House, formerly adjoining to London Bridge," might be rebuilt of timber.

The Act further provided that the burden of every house should be supported on an arch constructed either of brick or stone; and there should be party-walls, but it did not make these extend through the roof. The party-walls should be 18 inches thick; and the houses should not exceed four stories in height.

There were also regulations regarding workmen's wages, in order that no workman or labourer might make "the common calamity a pretence to extort unreasonable or excessive wages." It was further provided that where houses were bettered in value by such rebuilding of the City, the owners or others interested should pay to the City a sum equivalent to such improvement. There was in fact great equity in the dealings on this question.

2. A Proclamation by order of the King, of which the following is an abstract:

According to His Majesties special command to me signified, for avoiding the great dangers happening by Fire. That all persons having lodgings within His Majesties Palace at Whitehall should have so many leather Boquetts as there are chimneys within their respective lodgings; and that the same be kept there in readiness upon all occasions. These are therefore to require, that all and every the respective persons in the list hereunder written do within ten days after the date hereof provide themselves with so many Boquetts as in the said list are expressed, upon their respective names, according to the number of chimneys within their respective lodgings; and that the rules and orders hereunder written be duly observed upon pain of incurring His Majesties displeasure. And to the end the persons in the said list mentioned may with more conveniency be provided at hand, and at the best rates, care is taken, and James Gourlow, Yeoman of the Buttery, is ordered to provide the Boquetts and cause the same to be marked according to the said list, with the names and figures for all the respective persons and officers, to whom the said persons may accordingly send for the same, paying for them at the price they cost. Then come the:

Orders and Rules to be Observed within His Majesties Palace at Whitehal in case of Fire happening there, and for Prevention of Danger thereby.

I. That in case of any Fire happenning within His Majesties said House, every person do forthwith send by his servants or other persons to the Ayd therein, his Boquetts wherewith he stands charged, full of water.

II. That no person make use of any his said Boquetts for any ordinary or private use.

III. That after any Fire whereat the Boquetts shall be made use of, such as shall be left about the Place be gathered in by the Yeoman and Officers of the Pitcher House and carried to the Buttery, and sorted together ready to be delivered to the Owners, within Three days at the furthest, who is to send for the same within that time to the said Office.

IV. That if any Boquetts shall be impaired, made unservicable or destroyed in the Fire, the same shall be repaired and made good or others supplied by the respective Owners.

V. That no Person presume to change or detain the Boquetts belonging to another upon penalty of 20*s*.

VI. That on Thursday in Easter-week yearly every Person respectively upon penalty of five shillings for his Default, do cause to be sent into *Scotland*-Yard all the Boquetts he is charged withall, full of Water, to be called by the List, and viewed by the Officers appointed to search and try whether the same be sound and in sufficient repair, who are thereupon to give notice to the Gentleman-Usher, Daily Waiter, of any defaults, that the same be reformed.

VII. That a List of every Person, and the number of Boquetts he is charged to keep, with the figure or mark of distinction, be kept by the said Gentleman-Usher.

VIII. And to the end that no Person may pretend Ignorance of his Duty, touching the matters before directed, every person shall cause to be posted up, or hung up in a Table, the said Orders and Directions in some convenient place in his Lodgings.

IX. That care be had by the Possessors of any Lodgings in keeping their respective Chimneys duly swept.

X. That in case any Chimneys shall happen to be on fire within any Lodgings, so as to be discovered above the Top, the owner of the Lodgings shall forfeit 10*s*., to be paid upon demand to the Clerk of the Works, to be distributed amongst such Labourers as shall be imployed for the quenching the same.

XI. That in case any Chimney shall happen to be on fire, It is Ordered that they do not fire any Guns up the Chimneys, but rather clap a wet sheet very close against the Mantle and Jambes, that no Ayre draw in, which will readily extinguish. "Manchester."

3. A measure by the Common Council of Lond., entitled:

An Act for Preventing and Suppressing of Fires within the City of Lond. and Liberties thereof.

Whereas the late fierce and outragious Fire which happened in this City (continuing violently to the great Astonishment of all Beholders more than the space of four Days and four Nights) burnt, destroyed and consumed the greatest part of the Churches and Dwelling-Houses, rendering very many of the Inhabitants calamitous, and very much impoverished by the great Losses they sustained, and is by all justly resented (*sic*) as a most sad and dismal Judgement of Heaven: For the Prevention, avoiding and suppressing (as much as Human prudence is capable of) the like deplorable (and still too visible) Events, and dreadful Danger of Fire for the future within the City and the Liberties thereof, Be it Ordained, Enacted and Estab. by the Rt. Hon. the Lord Maior, the Aldermen his Bretheren, Commons in this Common-Council assembled, and by the Authority of the same, in manner and form following, that is to say:

I. That the City and Liberties thereof shall be divided and appointed into four equal Parts or Quarters, and the East part or quarter to contain these Wards following, viz. *Portsoken*, *Aldgate*, *Tower*, *Billinsgate*, *Bridge*, *Langbourne*, and *Lime Street*. The West part or quarter to contain *Farringdon Within*, *Farringdon Without*, *Castle Baynard*, *Cheapside*, and *Aldersgate*. The North part or quarter to contain *Cornhill*, *Bread Street*, *Coleman Street*, *Bassishaw*, *Bishopsgate* and *Cripplegate*. And the South part or quarter to contain *Queenhithe*, *Bread Street*, *Vintry*, *Cordwainer*, *Dowgate*, *Walbrook*, and *Candlewick Street*.

II. *Item*, That every of the said quarters shall be furnished and provided at or before the Feast of the Birth of our Lord God, next ensuing, of 800 Leather Buckets, 50 Ladders, viz. ten 42 ft. long, ten 32 ft. long, ten 20 ft. long, ten 16 ft. long, and ten 12 ft. long; as also of so many Hand Squirts of Brass, as will furnish 2 for every Parish; four-and-twenty Pickax Sledges, and 40 Shod Shovels. [See Art. XXIV.]

III. *Item*, That every one of the 12 [principal City] Companies provide and keep in readiness 30 Buckets, 1 Engine, 6 Pickax Sledges, 3 Ladders, and 2 Hand Squirts of Brass.

IV. *Item*, That all the other inferior Cos. provide and keep in readiness Buckets and Engines, proportionable to their Abilities. Of which those least able, to provide Portable Engines to carry up Stairs into any Rooms or Tops of Houses. The number of which Buckets and Engines to be from time to time prescribed and allotted by the Lord Maior and Court of Aldermens direction.

V. *Item*, That every Alderman who hath passed the office of Shrievalty provide four-and-twenty Buckets and 1 Hand Squirt of Brass. And all those who have not been Sheriffs, 12 Buckets and 1 Hand Squirt of Brass, to be kept in their respective Dwellings. And all other principal Citizens and Inhabitants, and every other person, being a Subsidy Man, or of the Degree of a Subsidy Man, shall provide and keep in their Houses a certain number of Buckets, according to their Quality.

VI. *Item*, That the several Inhabitants and Furniture [fire outfit] of each respective Quarter shall abide and remain within their own Quarters, and not go out further; excepting only such servicable Persons of other Quarters, fit to take Pains in that behalf: who may be called to yield their help as need shall require; and none other Persons or Furniture, without Special Order of the Lord Mayor and Sheriffs for the Time being.

VII. *Item*, It is farther ordained by the Authorities aforesaid, that in every of the said Quarters or parts of this City, by the advice of the Aldermen and Common Council of each several ward within that Quarter, there shall be chosen, retained, and appointed for each Ward, One honest and sufficient person, dwelling within the same, to be a Bellman there. Who shall from henceforth every Night, from the Feast of St. Michael until the Annunciation of St. Mary, diligently *walk up and down within the same Ward, from* 10 *ocl. in the night till* 5 *of the Clock next morning*. Their wages or Salaries to be levied within their respective Wards, according as the same shall be assessed by the Common Council of the same Ward, or the greatest part of them.

VIII. *Item*, That any Householder, upon any Cry of Fire, shall place a sufficient Man at his door well armed, and hang out a Light at his Door, if in the Night-time; upon default whereof every party offending shall forfeit 20*s*.

IX. *Item*, That every Householder shall, during the time of any Fire, have Water in a Vessel ready at his Door to quench and suppress all further increase of the Fire.

X. *Item*, That in every of the said four Quarters or parts of the City, a noted Bell be rung from *Lady-day* to *Michaelmas* at 10 of the Clock every night, and at 5 of the Clock every morning; and from *Michaelmas* to *Lady-day* at 8 of the Clock every night, and at 7 of the Clock every morning. At which respective hours the watch shall punctually sit and rise, who, as soon as they are met together, one out of every watch shall be sent the Rounds into every part of the Ward. And at his return another shall be sent out, and so successively all night long without Intermission, for prevention of Fire, Robbing, or other Inconvenience.

XI. *Item*, That every Inhabitant prepare some secure place in their Dwellings (not under or near any Staircase) to lay in their Seacoal-ashes, Embers, or any other sort of Fire-ashes; and that the said Ashes be quenched with Water every night before they go to bed. And that all Constables make inquiry of the security of Hearths, Ovens, and Stoves, and Places for laying Fire-ashes in twice every year.

XII. *Item*, That Plugs be put into the Pipes in the most convenient places in every Street, whereof all Inhabitants may take notice; that breaking of the pipes in a disorderly manner may be avoided.

XIII. *Item*, That as many Wells as can be found may be provided in every Street, with Pumps conveniently for furnishing of Water, especially in Frosty Weather, when other Water may be scarce.

XIV. *Item*, That the Lord Maior and Sheriffs, as also the Deputies and Common Council-men of such Ward where any Fire shall happen, have speedy notice thereof by several messengers to be dispatched from the Constables on the first discovery.

XV. *Item*, That at all such times the Lord Maior be attended with all his Officers, with the Marshals and all their Men, as also the City Workmen, and their Labourers: Who are all upon Notice of any Fire forthwith to Repair to the Lord Maior, and to observe such directions as shall be given them; the Sheriffs also to be attended with all their Officers, upon Pain to them of forfeiting £3 in default of such their Attendance.

XVI. *Item*, That the several Cos. of Carpenters, Bricklayers, Plaisterers, Painters, Masons, Smiths, Plumbers and Paviers, do yearly for each Co. elect 2 Master Workmen, 4 Journeymen, 8 Apprentices, and 16 Labourers, to be ready upon all occasions of Fire to attend the Lord Maior and Sheriffs, for quenching the same.

XVII. *Item*, That all Workmen and Labourers belonging to any Public Water Works within the City, the Seacoal-Meeters, Porters, Blackwel-Hall Porters, Leadenhall Porters, Ticket Porters, and Package Porters, do constantly attend the Lord Maior and Sheriffs in such Services. And that a list of all the names of the aforementioned persons, with the places of their abode, be brought yearly in a Table to the Lord Maior Elect upon the 1st day of Oct., to be placed in the Hall of the said Lord Maior to public view. And that henceforth the Admittances of all such persons may be upon the same condition.

XVIII. *Item*, That all persons, unless such as are employed or allowed by the Lord Maior or Sheriffs, Aldermen, Deputies, or Common Council-men, do keep (during the time of any Fire) within their own Dwellings until they are summoned to give their Aid; that so Disorder and Confusion in the Streets may be prevented.

XIX. *Item*, That all the Constables and Watchmen of the Ward where any Fire happens, assemble immediately at such a Place, and there attend on the Lord Maior and Sheriffs, and follow their Directions.

XX. *Item*, That all Brokers on the *Exchange* (according to their Obligation at their Admittance) do attend, in order to take care for such Goods and Household Stuffs as may be removed.

XXI. *Item*, That yearly there be chosen some able Citizen and Skilful Engineer to attend the Lord Maior and Sheriffs, or any of them upon such Accident. Who, by their advice, is to give his Assistance, and to blow up by their Direction such Houses, whereby the increase of the Fire may be most prob. prevented; and that Labourers be appointed to attend such Engineer.

XXII. *Item*, That the Lord Maior, Aldermen, and Sheriffs, Deputies, Common Council-men, Engineers, and all persons appointed and required by the Lord Maior and Sheriffs, to be aiding in Suppressing and Extinguishing of Fire, by Blowing up or pulling down Houses, shall be indemnified by this Court.

XXIII. *Item*, That all persons whose Houses shall be blown up, or otherwise demolished for the Prevention of the Increase of Fire, shall have such damages as the Common Council shall award; and that all persons labouring therein shall be awarded, as by Order of the Court of Aldermen shall be appointed; and that a rate be laid by the Common Council on the remaining Houses of the City and Liberties, for the satisfying thereof.

XXIV. *Item*, That once a Quarter the Deputy and Common Council of every Ward return certificates to the Lord Maior and Court of Aldermen, of the Number and Condition of their Buckets, Engines, Ladders, and all other necessaries of that nature. And the Engineer to examine the same; that on all occasions they may be found in readiness; and that the Certificates of *Michaelmas* Quarter be returned as well to the Lord Maior elect, as to the Lord Mayor.

XXV. *Item*, That such Quantities of Powder as shall be thought fit by the Lord Maior and Court of Aldermen shall be provided by the several Wards, and the several Cos. of this City respectively, and laid up in such convenient places as the said Lord Maior and Court of Aldermen shall from time to time direct and appoint; and that the principal Engineer make trial of all such Powder, that being satisfied of the Strength and Goodness thereof, he may the better use it accordingly.

XXVI. *Item*, That no person whatsoever be henceforth permitted at any time to make or cause to be made any sort of *Fire-works*; or to fire or cause to be fired, any such *Fire-works* within the City or Liberties thereof; except such persons only as shall be thereunto appointed by H.M., or any lawful authority under him.

XXVII. *Item*, That no *Gunpowder* be kept within the Walls of the City (except as aforesaid) but in such secure Places as shall be allowed and approved by the Court of Aldermen.

XXVIII. *Item*, That no Person lay Hemp, Flax, Wax, Gunpowder, Pitch, Tar, Brimstone, Rosin, or the like combustible commodities, in any Cellar, Warehouse, or other Place on that side next the Street, which, by the shaking of Links, Torches, or casting in of other Fire at the windows next the Street, may be in danger of such Fire.

There is a direction as to the recovery and application of the penalties. This *Fire Ordinance* No. 2 [No. 1 was that of 1189] bears the marks of panic legislation; but it also bears marks of much practical wisdom; and no doubt fairly indicates the necessities of the City just prior to, if not at the date, at which it was passed.

1670.—There was passed the 22 Charles II. c. 11—*An additional Act for the rebuilding of the City of London, uniting of parishes, and rebuilding of the Cathedral and parochial churches within the said City.* It enlarged the provisions regarding party-walls. It repeated the Thames Embankment clause. It provided, "that for the further convenience of Trade, the Chanel of Bridewell Dock from the Chanel of the River of Thames to Holbourn Bridge shall be sunk to a sufficient level whereby to make it navigable," and it further provides that Holbourn Bridge should be enlarged. Posts of oak might be substituted for corner piers of brick or stone. Water from tops of houses, to be carried down the sides in pipes. Duty on coals for enlarging streets, and other public works, re-enacted. A street to open 14 feet wide from Threadneedle Street to Loathbury to be made. Exemption in favour of Water House at London Bridge being built of timber re-enacted, "it being impossible to build it of brick." Parishes of City consolidated into 51. [FIRE ACT CHURCHES.] Indemnity for not reading Thirty-nine Articles, churches being burnt down. Two posterns and the gate at Ludgate to be enlarged.

Same year, in Marlborough, Wilts, then relatively a very considerable town, all landlords were ordered to keep chimneys and flues in reparation. (See 1690.)

1677.—There was pub. by Andrew Yarranton, Gent.: *England's Improvement by Sea and Land. To Out-do the Dutch without Fighting, To Pay Debts without Moneys, To Set at Work all the Poor of England with the Growth of our own Lands; To Prevent Unnecessary Suits at Law; With the Benefit of a Voluntary Register. Directions where Vast Quantities of Timber are to be had for the Building of Ships; With the Advantage of Making the Great Rivers of England Navigable. Rules to Prevent Fires in London and* *other Great Cities; with Directions how the Several Cos. of Handicraftsmen in Lond. may always have Cheap Bread and Drink.* This is a very quaint book, but we have here only to deal with it so far as it relates to Fire Prevention. At p. 67 there is given :

> ***Rules to prevent Fires in the City of London, and in the great Cities of England, taken exactly from the Method that is used in Saxony, and many other parts of Germany.***
>
> These Masons, Carpenters, Brick-Layers and Joyners at their reaching Fire, are put into the list with the rest to be always ready to help to quench and prevent the spread of Fires; fifteen of the Substantial Citizens Commissionated for to look to the well ordering of all things relating thereunto; an Engineer and his Assistants made and setled; two Sentinels appointed with Houses built for to hold the Water Engins in, and to put in the Engineers Ingredients, and Goods taken from all Houses on Fire or to be blown up; Sleds and Copper Tubs made.
>
> These things being made and done, then the Sentinel hath a Place on the top of the highest Steeple whereby he may look over all the Town; one is by Day, the other by Night; and every two Hours in the Night he plays half an hour upon a Flagolet, being very delightful in the Night: and he looks round the City; and if he observes any Smoak or fire, or danger of Fire, he presently sounds a Trumpet, and hangs out a bloody flag towards the quarter of the City where the fire is. Immediately all the people which are for the quenching of the Fires, with the Commissioners and Engineers, or as many as are in Town, run to the place; and presently the Commissioners or any two of them with the Engineers give the necessary orders for the suppressing of the fire, either by pulling down or blowing up the Houses. All the Labourers obey in assisting to pull down, carrying the Goods that must be removed to the Houses appointed, fetching the Water being ready filled in Copper tubs, upon Sheds, which is quickly done, for that the Sleds, Tubs and Water, with the place where they stand, are order'd so, a Horse may come at them; and there are two Cocks to supply with Water, one upon the one side of the space where the Tubs are, and the other on the other side: so the empty Tubs are filled as they return, whereby no Water can be wanting. And one side of the Square are the Houses for the Water Engines; the Rooms at the end of the Square are for the Engineers Ingredients; and the other side of the Square is Rooms to put such Goods in as they take from the Houses that are blown up or pulled down or preserved from the Fire. The Copper Tubs are fixed upon the Sleds in the open Sq^{re}; and all the Doors of the buildings are made outwards, by which the people may come to the Tubs of Water with Horses backwards and forwards uninterrupted. And all other persons may come to the several Rooms, one not interrupting the other. And this is a square piece of Land in some convenient place in the City. And things being thus fitted and ordered, upon breaking out of Fire, immediately every man is at work according to order; and it is very seldom that above three Houses are ruined by fire in any of these Cities. And if this Prevention, Rule and Order were not, it's possible that upon the breaking out of Fire the greatest part of the Cities would be destroyed; for many Cities are built of Fir, which is very full of Turpentine. Now with us in *England*, upon the breaking out of great Fires, all the rabble runs, crying Fire, Fire, to the great affrightment and amazement of most people near where the Fire is, and makes it worse than really it is, which causeth the removal of goods to their great loss and detriment. Besides, these sorts of Sudden Frights cost many Poor Women their Lives; and sometimes it goeth near the Man too. And another sort of people run to Rob and Steal, and it's feared to increase the fires into the Bargain, that they may better bring to pass their wicked ends. Then one cries, Pull down, and another cries, Blow up this House, another cries, Blow up that House. So grows a confusion not to be parallel'd. One stands in the way of another. Many Poor Souls do their best to prevent the spreading abroad of the Fire, and for want of judgement are many times destroyed. Then comes some person in Authority or other, and he cries, Fetch powder to blow up this House or that House, and no powder is at present to be had; at last, when the fire hath got great head, then the powder comes; Blow up this House saith the Gentleman, the multitude cry, no, no, Blow up that House. They are as it were at the Building of *Babel*, all in confusion. But pray you write by this Copy here set you, and then the Fires may be prevented, and peoples fears allay'd, and their minds quieted, the great and miserable calamities that Fires occasion prevented, and all people lye quiet in their Beds except those imployed. And then in such a great City as *London* is, many fires would be over and quenched, before the twentieth part of the people in the City did know there were any fire at all. And certainly, if ever such a thing as this take place, it is high time now it were done. I have here assumed the Houses built, Tubs upon the Sleds, and if you would have me do more, I cannot. Only I can tell you for *London* and the Suburbs this rule would do well in three places, viz. in *St. Martin's* Steeple in the Fields one Sentinel, in *St. Sepulchre's* Steeple another, and in the Monument another. And all things done as is here prescribed, your fears will be quickly gone, the Houses would raise Rents, and men would purchase Houses that would now sell those they have if they could.
>
> You will ask me by what authority this shall be done, and who shall pay the charge? I say it must be done by Act of Parl., and the several Cities and great Towns must bear their own charges in providing Houses and setting all in Order. But you will say, Our Parl. men will not do it for us. I cannot help that, but if they will not, in my second part I draw the form of Bill which shall fit the purpose.

The drawing given in illustration is very quaint. The book may be seen in the Guildhall Library. The form of Bill referred to throws no new light upon his project.

Maitland, in his *Hist. of Edinburgh*, says, under this date (1677): "Many disasters by Fire having been occasioned in Edin. by wooden Buildings covered with Thatch; for preventing the like thereafter, it was by the Town Council enacted that no Person presume to build a House of Wood, or cover a new Building with Thatch; but in time coming all Houses to be built with Stones and covered with Slates or Tiles, under the penalty of 500 marks, and the House to be demolished!"

1681.—The Corp. of Lond. having undertaken the bus. of Fire Ins. this year, it proposed to procure fire engines "far more useful to the public than any that hath yet been invented," as also a more powerful fire brigade than had existed, in view of protecting the property it insured from conflagration. Both parts of the scheme speedily fell through, under the circumstances set forth in our history of Fire Ins.

1683.—The *Friendly* Fire Office founded this year, announced in No. 18 of its regulations: "Watermen and other labourers to be imploy'd at the charge of the Undertakers, to assist at the quenching of Fires."

1688.—Out of a dispute which arose between the two early Fire Ins. Offices, which came before the King in Council in 1687, as set forth in our art. FIRE INS., HIST. OF, there sprang the following Order, throwing upon the fire offices an ann. charge in respect of the services of the Gunners of the Ordnance, in view of extinguishing or preventing the extension of fires, by blowing up adjacent houses, etc.:

Gunners reward to be paid by the Ensurers of Houses from Fire, for blowing up Houses, etc.

At Whitehall, 10 February, 1687 [new style 1688].—Present the Kings most excellent Majesty. Upon reading this day at the Boord a Report from the Right Honbl. the Lord Dartmouth, Master Generall of His Majesty's Ordnance, on the Petition of Thomas Silver and Thomas Dodge, his Majesty's Gunners, in behalf of themselves and others, for an allowance to be made them by the Ensurers of Houses from Fire, towards their charge, hazard, and pains *in blowing up of Houses, and otherwise extinguishing of Fires.* It is ordered by H.M.'s Councill, that in regard to the Petitioners and the Gunners under them are belonging to and under the immediate direction of the Master and Officers of the Ordnance, who are best able to judge of the merits of their respective Services. That the Sume of £60 p.a. be reserved upon each Patent that shall be granted to any Ensurers of Houses from Fire, to be paid quarterly into the Treasury of H.M.'s Ordnance, and from time to time distributed by the Master of the Ordnance for the time being according to the respective services, merits, hazards and accidents of the persons employed therein. Whereof H.M.'s Attorney and Sollicitor Generall are to take notice and see the same done accordingly. (Signed) James II.

1690.—In our hist. of Fire Ins. at this date we see that the fire offices, of which there were only 2, are stated to keep "a great many servants in livery, with badges, for the purposes of fire protection." But a scheme was then submitted to Parl. by Mr. Alex. Cutting, for the estab. in Lond. of a Salvage Corps on a large scale, which should do away with the necessity of Fire Ins. at all. [FIRE INS., HIST. OF.]

After the great fire at *Marlborough* this year, a petition was presented to the House of Commons, and is recorded in its journals, to the effect that leave might be given to bring in a Bill that all the owners of the land whereon the burnt houses stand might be compelled at the rebuilding thereof to cover them with slate or tile, "and make an allowance to their tenants for so doing," and that all other persons, when they repair thatched houses, may in like manner re-cover them with slate or tile. We do not find that any such Act was passed.

1697.—An Ordinance of the Mayor was addressed to the Aldermen of the several wards, requiring them to prevent the throwing of squibs, serpents, and other fireworks in and about the streets of the City. [FIREWORKS.]

1698.—As a means towards fire protection, the Scottish Parl. enacted that no future building erected in the City of Edin. should exceed 5 stories in height. [HEIGHT OF BUILDINGS.]

1703.—Maitland, in his *Hist. of Edin.* [ed. 1753], tells us that "two dreadful and destructive conflagrations having happened in the Parliament Close and Land Market, in a short space of time, the Common Council of the City, to prevent as much as in them lay the like disasters in time coming, *by putting a speedy stop to the progress of every casual fire*, made the following regulations for that purpose:"

1. That the Council do name out of the Burgesses and Freemen of this City 12 men to be called by the name of *Fyre-Masters*, and each Fyre-Master to be impowered to name 6 assistants to himself, to be ready at all Times upon the Occasion of Fyre. The Fyre-Masters to receive their Orders from the Magistrates, and their assistants from the respective Fyre-Masters, who are all to present themselves to the Magistrates each first Monday of Feby. and Augt. yearly.

2. That each Fyre-Master have in his Hand ane Baton, and each assistant ane Leather Cap on his Head, with a cross Iron-bar on it, and a Badge of Pewter on the Front of it, bearing a No. from 1 to 72; to be made by sic persons as the Counsell shall appoynt, and non other.

3. That each Fyre-Master and his assistants have ane large Hand-aix, made with Luggs, nailed to the shaft; and ane Sledge-hamer with ane Hand-saw, all marked with the Toune's Mark; and 12 Links alwayes lodged in each of the Fyre-Masters Houses.

4. That each Fyre-Master have his name above the Door of his House, or Close-head, where he dwells, bearing them to be such, and a List of the whole lodged in the Toune Guard.

5. The Counsell appoynts to be made twentie-four Sayes, and threttie-sex Stings with Knags, whereof sex standing full of Water, and the Stings hanging by them, and some Bucketts, with sex Shovells and sex Mattocks, with the Good Toune's Mark upon them; to be lodged on the north-side of the weigh-house, under a Shade to be made for that End; and the lyke at the Back-Close of the laigh Counsell-house; and the lyke at the New Well at the Foot of the Horse-Wynd in the Cowgate. And that each of the Fyre-Masters have a Key to open the several Shades above mentioned, and ane other key to be lodged in the Toune Gaird.

6. The Counsell appoynts 300 leathern Buckets or more to be made, and that there be lodged thereof in the Toune Guaird as many as can with convenience; and the rest to be hung up in the Old Kirk.

7. The Counsell appoynts the whole men to have each of them a Creill, and to repair to the Fyre with the Creills full of Horse-dung or muck upon the first Alarm.

8. The Counsell appoynts the Wells to be put in good Condition, and the Fyre-Cock in good Order, that the whole Fyre-Masters may know how to put on the Water to the Fyre-Cocks, and make the Water to run to every side of the street, by the Help of a Timber spout, which the Counsell appoynts to be made for that effect; and one to lye in each of the said places, with the Sayes and Stings.

9. The Counsell appoints ane to open the Wells, the Shades, and the Old Kirk.

10. The Counsell appoynts the Captain of the Guard, upon the first Alarm of Fyer, to send to the Magistrates, and haill Fyre-Masters, and the Keepers of the Good Toune's Stores, and advertise them thereof; and to call the haill Watermen and Fyremen, and injoin them to carry Water to the several places where the Fyre-Masters shall judge most convenient.

11. The Counsell appoints the Captain of the Guard for the Tyme being to cause 2 men, of the best qualified of their squadron, to walk nightly through the Streits, with a large Battone in their Hand, of fyve or six Foot long, who are heirby appoynted to give notice immediately to the Fyre-

> Masters and the Guaird in case of Fyre; and the said Captaine is to take ane Accompt of their Diligence each morning.
>
> 12. The Counsell ordeans each House in a Tenement within this Citie to keep two or three Ropes in ther Houses that may reach from the Top of the House to the Ground; and four Fathom more, with a sufficient Quantitie of Water in their Houses or Cellars, readie for all Occasions, under Certificatione.
>
> 13. The Counsell recomends to the present and succeiding Captaines, the present and succeiding Deacones of Craftes, the present and succeiding Constables, to attend the Magistrats on all Occasions of Fyre.
>
> 14. The Counsell recomends to, and appoints the present Dean of Gild and Successors in Office, to see the Wells and Fyre-Cockes put and keiped in Good Order and Conditione, in all Tyme coming; and recomends to and appoynts the present Treasurer, and his Successors in Office, to cause make all the said Materialls; and being made, to see them lodged in maner above prescryved, and to supplie them from Tyme to Tyme, as Occasion shall requyer.
>
> 15. The Counsell discharges the selling, pledging, resetting, or anywayes imbezelling of the said Materialls, certifying the Transgressors, they shall be fyned and imprisoned at the Will of the Magistrats.

And the Council, "as an Incouragement to the Assistants aforesaid, settled an Annuity of £10 *Scotish* on each." (See 1726.)

1704.—The promoters of the Fire Ins. project set on foot at the *Lombard House*, Duke Street, Westminster, this year, undertook for the first time the ins. of household goods and trading stock [FIRE INS., HIST. OF], and made the following announcement:

> The said Corp. have provided a competent number of watermen, with coats and silver badges of the figures upon this paper, carmen, with carts, and porters, who give security for their fidelity, and are always to attend at fires, to help to remove insured goods to any place desired; and have also warehouses at convenient distances from all parts, to which those that have no other convenience may send them, and have them again when the danger is over, without paying anything.

This was really a species of SALVAGE CORPS—the first actually estab.

The amended "Proposals" of the *Friendly* Fire Office issued this year give an account of the Corps of Firemen kept at its expense for aiding in the extinguishment of fires. See FIRE INS., HIST. OF.

1707.—There was passed 6 Anne, c. 58 [some ed. of the Stat. c. 31]—*An Act for the better preventing the mischiefs that may happen by Fire.* Its preamble sets forth:

> Whereas many fires have lately broke out in several places in and about the Cities of Lond. and West., and other parishes and places comprised within the Weekly Bills of Mort., and many houses have frequently been burnt and consumed before such fires could be extinguished, to the impoverishing and utter ruin of many of Her Majesty's subjects, the rage and violence whereof might have been in part prevented, if a sufficient quantity of water had been provided in the pipes lying in the streets, and if party-walls of brick had been built between house and house, from the foundation to the top of the roof, and less timber in the front of houses; For the preventing therefore the like mischiefs in the future, be it enacted:

1. From 25 March, 1708, the churchwardens of each parish within the B. of Mort. to fix on the mains and pipes of any water work, stop-blocks of wood, or fire-cocks, etc. A mark was to be fixed on the front of an house over against the place where the fire-cock lies.

Every parish was to "have and keep in good order and repair in some known and public place within each parish, a large engine, and also a hand engine, to throw up water for the extinguishing of fires, and also shall provide, keep, and maintain one leather pipe and socket of the same size as the plug or fire-cock, to the intent the socket may be put into the pipe to convey the water clean and without loss or help of bucket, into the engine." A penalty is imposed upon the churchwardens in case of default.

A gratuity of 10*s.* was to be paid to the turncocks "whose water shall be found on, or shall first come into the main or pipe where the first plug shall be opened at any fire." And the "first engine keeper which brings in a parish engine to help to extinguish any fire, if in good order and complete, with a socket, hose, and leather pipe," to be paid 30*s.* The keeper of the second parish engine 20*s.*, and the third 10*s.*

2. Contains a reference to the services of the watermen of the ins. offices [*i.e.* firemen], and a provision that they should be free from impressment. [FIRE BRIGADES.]

3. Servants who through negligence fire any dwelling-house, out-house, etc., to forfeit £100, or be sent to the workhouse for 18 months. [FIRES FROM NEGLIGENCE.]

4. All houses erected after 1 May, 1708, within the Bills of Mort., to have party-walls of brick or stone "of two bricks thick at least in the cellar and ground stories, and 13 inches upwards to the roof, and to extend 18 inches through the roof." And that no "mundillion or cornish" of timber or wood under the eaves should thereafter be suffered in any new houses. The front and rear walls of all new houses to be built of brick or stone, to be carried 2½ feet high above the garret floor, and coped with stone or brick. Any houses built contrary to these regulations, the owner and head builder or workman to forfeit £50.

5. On the breaking out of any fire, the constables and beadles of the parishes to immediately repair, with their staves and other badges of their authority, and be aiding and assisting "as well in the extinguishing the said fires, and causing people to work at the engines, as also in preventing goods being stolen," etc.

6. No action to be prosecuted in against any person in whose house or chamber any fire shall accidentally begin. [FIRES BY ACCIDENT.]

1708.—There was enacted 7 Anne, c. 17—*An Act for making more effectual an Act* *made in the 6th year of Her Majesties reign for the better preventing the mischiefs that may happen by Fire.* Some doubt had arisen whether the parishes united after the Fire of Lond. were not obliged by reason of being so united to keep 2 engines. This Act declares that such united parishes shall be taken as one parish for the purposes of the recited Act. It next provides out of what fund rewards to turncocks, etc., under the former Act, were to be paid; and that the keeper of any other large engine (*though not a parish engine*) should be entitled to reward. The vestries were empowered to order more than one of each of the engines, etc., named in the former Act for each parish, "in respect of the largeness thereof." The key of stop-cock and the pipe to be left at house where notice of a fire-plug was written up.

The parish officers might assess rates for the maintaining engines, etc., to be levied like the poor-rates. On change of water-mains, stop-cock to be inserted afresh as churchwardens should direct.

The clause in the former Act that party-walls were to be wholly of brick or stone not to extend to houses on London Bridge. Otherwise all houses built on either old or new foundations to have party-walls between house and house. Then there were directions how the party-walls were to be built; and as to pulling down old and building up new party-walls. Also as to how chimney-jambs and backs should be built. No timber to be used in foundation of houses except where necessary from nature of ground. No door frames to be nearer outside wall than four inches.

Then we reach another series of provisions—the first of this description which had been enacted—for the regulation of dangerous trades within the City. The Act recites: "XI. And whereas the distilling of turpentine, and the drawing of oil of turpentine and rosin by distilling of common turpentine, and the boiling of the said oil of turpentine together for making of common varnish, within the City of Lond. and the Liberties thereof, has often been, and may hereafter prove of the most dangerous consequence to the neighbourhood where such trade or practice has been used, by the frequent fires that have and may happen thereby." For preventing whereof in future it was then enacted that not above 10 gallons of turpentine, etc., should be distilled at one time in any building contiguous to other buildings, except in Southwark in houses already built, under penalty of £100.

In the scheme of the *Exchange House* Fire Office—Mr. Charles Povey's—as set out in our HIST. OF FIRE INS. under this date, there is a very elaborate organization for the extinguishment of fire, and protection of goods, etc., saved.

1711.—At this date the London theatres were provided with fire engines in case of fire arising during the performance. [THEATRES, INS. OF.]

1718.—There was pub.: *The Case of the Inhabitants of the Cities of London and Westminster and of the Parishes and Places within the Bills of Mort., with respect to the Laws now in Force for preventing Mischiefs that may happen by Fire. Humbly offered to the Consideration of the Parl. of Gt. Britain.* London, Printed by H. Meere at the Black Fryer in Black Fryers, 1718. Which sets forth:

> Notwithstanding the good and wholesome Laws made to prevent Mischiefs by Fire, and the dreadful Examples of many Thousand of Families which within a few Years last past have been entirely ruin'd by Calamities of this Kind, some having lost their Lives, others being maim'd and disabled, and vast Numbers from a competent and perhaps flourishing Condition of Life having been reduc'd to Want and Beggary: And notwithstanding several useful and necessary *Societies* having been form'd and erected for Insuring Houses and Goods against Loss by Fire, and thereby lessening and in some measure repairing the Damage done to private Sufferers out of a Common Stock and Fund deposited in those offices; the Watermen employ'd by them being also found upon Tryal to be exceeding diligent and serviceable in extinguishing of Fires, under such good Regulations and Orders highly conducive to that Purpose as by the said offices have been made and provided; yet still it appears by sad and woful Experience that many Fires have lately happen'd within these two great and populous Cities, which have spread far and done very great Damage before they could be extinguish'd; whereby there is but too much Reason given to believe either that the Laws, already made for this purpose, are in themselves defective, or else that the persons appointed to put them in Execution have been remiss in their Duty; there being good Grounds to suspect, that too many have declin'd giving their Assistance in cases of this Nature, as the Law directs they should do, out of a Persuasion that their Neighbours could be no great Sufferers by Fire, because the Ins. offices were obliged to make good the Damage provided they took Care to Insure in one or other of those offices. And however that be in Fact, it is notorious, that there are great Deficiencies in one or other, if not in both these kinds; which will appear to be undeniably certain and Evident if an impartial Enquiry be made into the following Particulars, viz.: By one Act of Parl. in the 6th and another in the 7th year of her late Majesty, it is enacted that the Churchwardens of every Parish within the Liberties of Lond. and West. and B. of Mort. shall place and fix upon the Mains and Pipes of any Water-Works such and so many Stop-blocks of Wood, with a Two-Inch Plug, or such and so many Fire-Cocks to go into each Main or Pipe at such Distances in each street as the said Churchwardens shall direct; They are likewise requir'd to affix a Mark or written Notice of a Fire-Plug upon or in the front of the House or Houses over against the places where the Stop-Blocks or Fire-Cocks lye, and to keep an Instrument in such House for opening the Plug, and a key for the Stop-Cocks, as also a Pipe for the Water to come thereout, of the same size with the Plug or Fire-Cock, whereby the Water may be convey'd clean into the Engine without Loss, Lett, or Delay.
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> These Provisions were no doubt very well intended, and are in themselves good and useful: but they would be much more so if Care were taken to ascertain the size and make of these Plugs, Cocks, and Pipes in a more exact manner, and to oblige the Churchwardens to place them at some particular settled Distance from each other, so that they might easily be found and presently set a-working upon the first breaking-out of any Fire; For it is notorious that there is no Plug or Fire-Cock in some Streets; and in others they are plac'd at such uncertain Distances and so obscurely, and are so often

remov'd and alter'd, that they are either not to be found, or it is so long before they are found that in the mean Time the Flames get a-head and do great Damage, before Water can be provided to supply the Engines. And for this there is at present no Redress, because the power of the Churchwardens is in this so material a Case perfectly discretionary. Besides, tho' the Plugs may be of a Two-Inch size in some one part of them, yet they are not large enough to receive a Fire-Cock that shall have two inches clear Waterway: so that they will not deliver the water fast enough to supply a large double barrell'd Engine that plays with a continual Stream (such as may be seen at the Engine Makers at Millbank, Westminster), and the Instruments proper for the opening of the Block and drawing out the Plug are frequently out of order, or not to be found upon any sudden Emergence at the Breaking-out of a Fire, and in either of these cases it seems a Hardship to sue the Penalty upon the Churchwardens because they are oblig'd to trust to the Skill and Fidelity of such Workmen as are commonly employ'd to make the Plugs and Cocks, and to the Care of those Persons at whose House the Instruments for the opening the Block and drawing the Plug are, by this Act, order'd to be deposited. So that there seems to be good Reason for laying this Penalty upon other Persons besides the Churchwardens, whenever there shall be a Default in these Particulars: every such Default being attended with very fatal mischievous Consequences.

Most of these Inconveniences might be prevented if every Parish were oblig'd to provide so many Cocks of Brass, and Augers to fit them (such as may be seen at the Place aforesaid), and Liberty given to place them in the Mains or Pipes of any Water Works near to the Place where the Fire is.

By these two Statutes it is likewise farther enacted, That every Parish shall have and keep in good Repair one large Engine, and one Hand-Engine, to throw out Water for the extinguishing of Fires. And by an Order of the Vestry every Parish, in Proportion to its largeness, is empower'd to provide more than one Engine of each Sort; and also to keep and maintain one leathern Pipe and Socket in every Parish, of the same Size with the Plug or Fire-Cock, to the Intent that they may be always ready to fit on in order to work in the conveying of Water into the Engine with Dispatch and Expedition.

These are also good and wholesome Provisions if they were well pursu'd and duly executed. But most of the Engines with which the several Parishes of London and Westminster are at present supply'd appear to be so far unfit for the service they are employ'd in that they may be more properly called Squirts than Engines; because they do not play with a continued Stream, neither have they any leathern Pipe fix'd to them, whereby to throw the water on the Fire when it first breaks out, and rages for some time in the inside of an House, or Back-part of any Building; but the men that work the Engines must stay till the Fire forces its way to the outside, or Front of a Street (that is, till it has got a-head and consum'd one or more Houses), before they can throw on Water to extinguish it.

To prevent these Inconveniences it seems highly reasonable that for the future no Parish Engine should be admitted as such within the Meaning of the Act till it be tried and approv'd by such persons as shall be thought proper.

And it is highly to be wish'd that every Parish were oblig'd to provide and keep a certain length of Pipe or Hose of leather with Screws divided into equal parts, all being fitted to each other; and the Fire-Cock, the Sockets or Hook and their Screws, to be made alike and of the same Dimensions in all Parishes. And further, That every Parish should be obliged to have a certain Number of lengths of leathern Pipe to screw on to the upright Pipe of each Engine, with Screws for the Branch and for each length of Pipe so contrived as to fit each other upon the first Tryall; whereby the Engines may immediately begin to play without Loss of Time or Trouble in putting the several parts of it together: For as the Case is at present the several Parish-Engines and the Instruments belonging to them are Different from each other, and so unlike in their make and Dimensions that whenever a Fire happens not above three or four of them can be put into a condition of playing at a time; and if any one of them is disabled by an accident, or any one part wanting or out of Order, there is no supplying of the Defect, at least not without great Trouble and Loss of Time: but such Engine is presently dismissed and sent away, as utterly useless and unserviceable, and perhaps continues and is laid up in that State for a long Time after without any Care had for repairing it.

Lastly. It is farther enacted by the Statutes above mention'd, That upon the Breaking-out of any Fire the Constables and Beadles shall upon Notice repair to it, with their Staves and Badges of Authority; and shall there assist in extinguishing such Fire, causing People to work at the Engines, helping to remove Goods, and apprehend such as come to steal and purloin from the Inhabitants.

This Clause is highly necessary and of admirable Use and Service to prevent Damages by Fire: But it is capable of very considerable Improvements no less conducive to the same good Ends and Purpose; for upon the Breaking-out of any Fire, there is always such a Crowd and Press in the Street where such Fire happens, that the Engines cannot be brought to it without great Difficulty, neither is there Room to play them in, and the poor Sufferers are very much obstructed in removing their Goods; the proper Persons to direct and give Orders cannot be heard or attended to; and upon the Blowing up of any House or fall of any ruinated Buildings, there is frequently a greal deal of Mischief done among such vast Numbers of useless and un-necessary By-standers. Now to prevent these evils and Inconveniences, it would be of great Service to the Publick that the Constables and Beadles might be assisted by a party of the Militia, to be rais'd upon this Occasion, and were authoriz'd and empower'd to guard the Avenues or Passes to the Street where the Fire is, especially if it should happen in some close or narrow Place; and to keep off all Women, Children, and other Persons who are unfit for Work or Service upon these Occasions; which method is strictly observ'd in other Countries: For such throngs of Women and Children are a considerable Obstruction to the speedy Extinguishing of Fires; they occasion great Tumults and Disorders, incommode the free Playing of the Engines, divert and take off the Men from working at the Fire, and frequently expose themselves and others to great Dangers and Mischiefs, when at the same time they can do no manner of Good by their Presence.

A due Consideration of the foregoing Particulars and the applying of the proper Remedy in each Case, would contribute very much to the amending and enforcing of the Laws now in Being, for preventing Mischiefs that may happen by Fire, and to the quickening those Persons in their Duty who are oblig'd to put them in Execution; whereby the two great and populous Cities of Lond. and West. might be much better secur'd than at present they are from Calamities of this Kind, which in themselves are most sad and deplorable: It being found to be true by Experience and common Observation that generally speaking more than one-half of the Damage done by Fire is justly to be imputed to the neglect of Parish-Officers in not providing proper Engines, and other Instruments to be employ'd in this Service, and to the great disorders and tumultuous Crowds of multitudes of all sorts of People who never fail to get together upon these Occasions.

What farther Regulations are necessary besides these already mention'd, or in what manner and under what Penalties and Restriction the grievance here complain'd of is most proper to be redressed, must with all due Humility be submitted to the Honour, Wisdom, and Justice of the Parl. of Gt. Britain.—*From orig. Broadside in the British Museum.*

In 1718 also there was enacted the 5 Geo. I. c. 26—*An Act for preventing the mischiefs which may happen by keeping too great quantities of Gunpowder in or near the Cities of Lond. and Westminster, or the suburbs thereof.* [GUNPOWDER.]

1722.—The *Royal Exchange* Ins. Corp., which got its Fire Department into work this year, announced that it had provided "several engines, with a sufficient number of firemen to work the engines, and watermen *all clothed in yellow*, with proper instruments to extinguish fires, and a sufficient number of porters, with bags, etc." See art. 9 of Proposals given under FIRE INS., HIST. OF. This we believe was the first instance of a fire office starting fire engines on its own account.

1724.—There was passed 11 Geo. I. c. 28—*An Act for the better regulating of Buildings, and to prevent mischiefs that may happen at Fires within the Weekly Bills of Mort., and other places therein mentioned.* This Act is very much a repetition of the provisions of the measures of Queen Anne already recited. It chiefly relates to builders, and puts penalties upon them for neglect in cases of party-walls. Water from tops of houses to be conveyed down by party pipes.

1726.—The Common Council of *Edinburgh*, "for the more effectually extinguishing of the said Casual Fires," made certain Regulations; of which the following is a copy:

1. That the No. of Fire-Masters and Firemen, with their Utensils and Equipage, be continued as appointed by former Acts of Council.
2. That the Firemen, now consisting of 12 Companies, be formed into 4 Squades, to consist of 3 Cos. each Squade.
3. That 5 Standards be provided, viz. one for each Squade, to be numbered 1, 2, 3, 4, and the 5th of a larger size, to be denominated the President of the Fire-Masters Standard, to be marked F.P.S.
4. That these Standards be kept in the Town Guard-house; and on the first Cry of Fire, to be carried by a party of the said Guard to the neighbourhood of the Fire, and erected at convenient Distances.
5. That on the first Alarm of Fire, the several Firemen, with their Caps and Implements, repair forthwith to their respective Standards, where they are to receive their several orders.
6. That a No. be ordered from every Squade to bring the Fire Ladders, Leathern Buckets, and Syes, and to be imployed in working the same; while the rest are occupied with other Utensils in extinguishing the Flames, according to Direction.
7. That on the first notice of Fire, the President and Fire-Masters shall repair to the Presidents Standard (where the Magistrates are to assemble), whence they shall go to view the Danger, and return with their opinion in what manner the Fire may the soonest be brought under; which being agreed on, the Fire-Masters, with their assistants, to repair to their several standards and stations, to be imployed in the best manner in extinguishing the said Fire.
8. That the President continue at his own Standard; that on a sudden Alteration the magistrates, and he, in concert with the Fire-Masters, may give such Directions for a new Disposition as may be necessary.
9. That the Standard-bearers, who are to be Soldiers of the Town-Guard, shall informe the late coming Firemen of the post taken up by their respective masters, for them to repair thither.
10. That 8 men be chosen out of each Squade of the Town-Guard, making 24 in No., to be employed solely in working the Engine, and to be called *The Water Co.*; to be under Direction of the Supt. of the Water or his assistants, who shall be at least two.
11. That on the first Out-cry of Fire, the 8 watermen who are on the Guard to call his Fellows not on the Guard, for them likewise to repair to the magazine; and for the greater Dispatch the key thereof shall be lodged in the Guard-Room, with a list of the Watermens names, and Places of their abode.
12. That the officer on Guard, on the first notice of Fire, send one of the Watermen on the Guard to call his Fellows, not on the Guard, for them likewise to repair to the magazine; and by another messenger, to give notice to the master of the said Watermen.
13. When a fire shall happen, all the Soldiers belonging to the Town's Guard shall, on the first Alarm, repair to the Guard-House, to be employed as the magistrates shall direct.
14. That four new Fire Engines be provided, viz. one double barrelled and double valved, of a continued Stream, to discharge at least a 100 *Scots* pints in a minute; another capable of discharging 60 pints in the same Space of Time; and a third to discharge 24 pints in a minute; and that a sufficient No. of leathern pipes be provided to carry the Water from the Fire-cocks to the Engines, and from the Engines to the places to be defended.
15. That 3 lengths of the leathern Pipes be always screwed together in the magazine; and that Hand-barrows be provided in proportion to the No. of Rolls of the said leathern pipes; and that a proportionable No. of Hand-screws of proper sizes be brought, to screw the several parts of the pipes together, to prevent Confusion and Inconvenience of twisting and turning the pipes when they are to be used.
16. In order to render the Water Co. expert in managing the leathern pipes and Engines, they be exercised in the use of them once a month by the Overseer and his Assistants; and the Watermen besides their pay, to have each the same allowance with the Firemen: And in order to prevent Confusion in removing furniture from upper rooms, certain Ropes shall be provided to lower them down the outsides of the Houses.
17. That the ground adjoining to the northern side of the great Cistern be inclosed by a wall 14 ft. in height, and Shades to be built thereon for the reception of the leathern Pipes, Engines, Hand-barrows, and other utensils employed in the extinguishing of Fires.
18. That 3 Ladders each of 40 ft. in length, with double steps, be provided for carrying the leathern Pipes to upper Rooms and the Tops of Houses, never to be let out, or used on any other occasion than that of fire.
19. That the No. of Leathern Buckets, amounting to 150, and 30 Syes be kept in good Repair in the lower Parliament-House, till the Fire Engines be provided, *and the Use of them perfectly known.* (See 1738.)

1727.—The *Sun* Fire, in its new Proposals issued this year, made the following announcement:

> N.B.—For the farther encouragement of persons insuring, there are provided several fire engines, and there are also employ'd in the service of the said office (within the Bills of Mort.) thirty able body'd firemen cloth'd in blue liveries, having silver badges with the *Sun* mark upon their arms; and twenty able porters likewise wearing silver badges with the *Sun* mark, who are always ready to assist in quenching fires and removing goods, having given bonds for their fidelity. *And also all cities and great towns may receive assistance and encouragement for purchasing of engines and proper machines for putting out fires, upon application to the said office, agreeable to the number of ins. made by this office in such respective cities or great towns.*

1738.—The Common Council of the City of Edin., in reply to a Petition from the "Fellowship Porters Fraternity," complaining of "being imposed upon by the So. of Trone-men in this City," presented Regulations to the Town Council for their approval and approbation, which contained (*inter alia*) the following:

6. That in case of any accidental fire within the City, all the said Porters and Workmen shall, upon the first alarm thereof, immediately repair to the place where the fire shall happen, to be there imployed, as the Magistrates or Fire-masters shall direct; and are of opinion thir Presents ought to continue only during the Council's Pleasure, or until the same shall be altered or varied by the Council, as the Rep. subscribed by the Committee bears.

All of which was confirmed.

1749.—Was enacted 22 Geo. II. c. 38—*An Act to prevent the mischiefs which may happen by keeping too great quantities of Gunpowder in any one place, or carrying too great quantities of Gunpowder together from one place to another.* [Gunpowder.]

1752.—We have seen under Fire Brigades, as also under Fire Extinguishment, and in some parts of the present art., that the early fire offices, without exception, all regarded it as essential to their safety to keep an organized staff of firemen to attend all fires occurring in the Metropolis, and lend aid in their extinguishment, and in preventing their extension. At this date a sheet was issued by the *Lond. Assu.* Corp.: "Instructions for the Firemen and Porters belonging to the *Lond. Assu.* of Houses and Goods from Fire," as follows:

I. That at all alarms of Fire, where an Engine is necessary, the Firemen and Porters do take care, that one or more of the Engines belonging to the Corporation be forthwith convey'd to the place where the fire is, in order to extinguish the same.

II. That the Firemen and Porters at all alarms of fire do make haste to the place where the Fire is, using their best endeavours to extinguish the same, and to save any goods in danger.

III. That the Firemen and Porters when on duty do obey such orders and directions as shall be given by the Foreman: And if he be not present, then such orders and directions as shall be given by his deputies, who are to take upon them the management till the Foreman comes.

IV. One of the deputies in the Foreman's absence is to preside and manage on the East side of *Fleet-ditch*, and the other on the West thereof; but either of them may preside and manage both on the East and West of the said ditch when the other is absent.

V. That every Fireman and Porter on their first coming to a Fire do shew themselves to the Foreman, and receive instructions from him, where and how to act; and that the Foreman take notice of the time (as well as he can) of each man's first appearance; and every fireman and porter that does not give such notice shall be esteemed as absent; as they shall be who come not in to do some real service, where the fire is of long continuance.

VI. That the Firemen wear their Badges, and have their Certificates always about them, to distinguish them; and if any happen to be pressed for want thereof, the charge that shall thereby be occasioned, such Fireman shall bear: And all Firemen and Porters are to have the No. of their Badges affixed in white upon the sleeves of their Waistcoats, that in case they work in their Waistcoats at Fires, they may be known; and if any Fireman or Porter shall be found working at any fire, without the No. of his Badge affixed as aforesaid, such Fireman and Porter shall be forthwith discharged the service of the Corp.

VII. That no Fireman shall causelessly deface, pull down or destroy anything whatsoever, that is not apparently necessary for preventing the spread of Fire.

VIII. That if any Fireman, in drink or otherwise, do behave rudely, negligently, or disorderly, that then the foreman or deputy shall take from him his Pole-Ax, etc., and deliver them into the office, with an account of such behaviour.

IX. That the Firemen who behave themselves courteously, and with diligence and fidelity, may accept money that is Voluntary offered and given, leaving notice thereof in writing with the Sec., or some of the clerks in the office, in 24 hours; but shall not exact, ask for, or demand, any money from any suffering person (or that is likely to suffer), nor shall they favour any person for reward, promise, or threat, in securing his House, preferable to another's; but apply themselves for the security of that which is most exposed to danger.

X. That at all Fires, the Foreman do enquire into the same, and how it happened, and certify for the Firemen and Porters present, the time of their respective appearance, discharge and departure from the same: And also their respective diligence, behaviour, and service (and upon any small alarm, Firemen attending in the absence of the foreman, or deputies, shall get a certificate from the inhabitants, as usual), and deliver it to the Foreman or deputy, who shall enquire thereinto, and deliver it to the proper officer.

XI. That if any person whose House is on fire will not admit the Firemen and Engineers to work, subdue and extinguish the same, or the porters to remove the Goods, the Foreman or Foremen, his or their Deputies, shall then declare against him, and take witnesses of such refusal and declaration; and if any unruly persons obstruct their work, then to charge a Constable with them.

XII. That when any of the *Governors* or *Directors* shall happen to be present at any fire, upon making himself known, the foreman, and all others under them shall immediately obey, and do such orders and acts as he and they require, without dispute or gainsay; but not to take their orders from any other person.

Lastly. When occasion requires, the Firemen and Porters are mutually to assist one another, viz. the Firemen the Porters, in removing Goods in danger; and the Porters the Firemen, in extinguishing Fires. And the Firemen and Porters are strictly ordered to call their Foremen, or their deputies, to all Fires and alarms, on pain of being discharged.

N.B. *The above Orders, Rules and Regulations are to be observed by all parties concerned, upon pain of being cashiered. And every Fireman is required to give his name and place of abode, in writing, to be stuck up in Watch-Houses near their abode, in order to be called upon occasion.*

Then follows a list of the names and addresses of 30 "Watermen for extinguishing fires," and of 20 Porters for Removing Goods, with this foot-note, "The office of the said Corp. is kept at their House in Birchin-Lane, Cornhill, 1752."

1755.—Nicolas Magens, in his famous *Essay on Insurances*, pub. in Hamburg this year said: "No person should ever resent the strictest inquiry being made into the calamity [of Fire]; but a general mistrust in this particular ought to be esteemed needful, since it is for the public good that delinquents be discovered and brought to justice." [Fire Inquests.]

This year there was pub.: *The Manner of Securing all Sorts of Buildings from Fire, or a Treatise upon the Construction of Arches made with Bricks and Plaister, called Flat Arches, etc.;* written in French by M. le Compte d'Espie, and translated by L. Dutens. [FIREPROOF BUILDINGS.]

1759.—There was enacted 33 Geo. II. c. 30—*An Act for widening certain streets, lanes and passages within the City of London and Liberties thereof; and for opening certain new streets and ways within the same; and for other purposes therein mentioned.* Secs. 23 and 24 of which relate to party-walls, and require an extension of thickness in certain cases; and no timber, "except those of the roof, girders, and templets to be let into same."

1763.—There was enacted 4 Geo. III. c. 14—*An Act for the better regulating of buildings; and to prevent mischiefs that may happen by Fire within the Weekly B. of Mort., and other places therein mentioned.* This re-enacts the provisions of several of the already recited Acts regarding party-walls, and consolidates the same. The party-walls were not to be "cut into or wounded" by adjoining buildings. The expense of party-walls pulled down and rebuilded pursuant to the recited Acts to be estimated between the parties at the rate of £6 10*s.* per rod. Backs and fronts of all future buildings were to be of stone, "or good, sound, hard burnt bricks." No timbers to be let into party-walls, except timber girders and binding joists, and no timber of roofs.

Sec. x. of this Act enabled fire ins. cos. suspecting fraud in the origin of any fire to apply the money insured to rebuilding or reinstating the building burned—a very important provision viewed in relation to Fire Protection; and one which has since become a leading feature in the conduct of the bus. of fire ins. [FIRE INS., HIST. OF, this date.]

1766.—There was enacted 6 Geo. III. c. 37—*An Act to explain, amend, and render more effectual, an Act made in the fourth year of his present Majesty's reign, for the better regulating of buildings, and to prevent mischiefs that may happen by Fire within the Weekly B. of Mort. and other places therein mentioned.* This measure contains provisions regarding defective party-walls, and pulling down and rebuilding the same. It inflicts penalties on builders not observing regulations as to laying timbers in new party-walls. From and after 1 June, this year, head builders to be liable not only for penalties, but to make good defects and irregularities. It repeals some of the provisions of the preceding Act regarding the non-admission of timber into party-walls, except as therein provided, on the ground that they "are inconvenient and no means of preventing the spreading of fire"—the latter point being one open to difference of opinion.

1771.—Was enacted 11 Geo. III. c. 35—*An Act for reducing into one Act of Parl. the several laws relating to the keeping and carriage of Gunpowder; and for more effectually preventing mischiefs by keeping or carrying Gunpowder in too great quantities.* [GUNPOWDER.]

1772.—There was enacted 12 Geo. III. c. 73—*An Act for the better regulation of buildings and party-walls within the Cities of Lond. and West. and the Liberties thereof, and other the parishes, precincts, and places in the Weekly B. of Mort., the parishes of St. Mary-le-bone and Paddington, St. Pancras, and St. Luke at Chelsea, in the County of Middlesex; and for the better preventing of mischiefs by Fire within the said Cities, Liberties, parishes, precincts, and places, and for amending and reducing the laws relating thereto into one Act; and for other purposes.* The preamble recites:

> Whereas the several Acts of Parl. now in force for regulating buildings and party-walls, and for preventing mischiefs happening by fire, for providing fire engines, and obtaining a sufficient supply of water at fires, and for paying rewards to persons assisting at fires within the Cities of Lond. and West. and the Liberties thereof, and other the parishes, precincts, and places within the Weekly B. of Mort. [as named in the title of the Act], and the provisions, regulations, and restrictions made and specified in and by the said several Acts have, in many respects, been found insufficient to answer the good purposes intended thereby. And whereas it will tend to the safety of the inhabitants, and prevent great inconveniencies to builders and workmen employed in buildings within the Cities and Liberties, parishes, precincts and places, if some of the said Acts were repealed, and the good and wholesome laws and provisions therein contained were re-enacted and reduced into one Act, with certain further regulations, amendments, and provisions respecting such buildings, and for preventing mischiefs by fire as aforesaid. May it please Your Majesty that it may be enacted, etc.

We do not propose to follow the details of this measure, but only to indicate wherein it differed from the measures already passed under review.

The provisions as to party-walls re-enacted; such wall to be built equally on land belonging to the two houses. No bow windows to be made except for shops. Regulations for chimney-jambs in party-walls. Hearths to be arched with brick. Provisions for setting stoves, boilers and coppers. Mayor to have authority in respect to rebuilding where properties are intermixed. Sheriffs to summon juries to determine whether premises ought to be rebuilt. Provisions as to propping up, and afterwards taking down "ruinous houses." Water from tops of houses to be carried into streets by pipes under penalty of £10. Provisions as to distillation of turpentine being restricted to 10 gallons. Shipwrights, etc., not to be included in this limitation.

Fire engines to be kept in every parish (in a public place), or churchwarden fined £10. Rewards to turn-cocks and engine men for priority of attendance as before; but only on approbation of aldermen.

We next arrive at a new feature. Sec. 28 recites:

> And whereas many of the parishes within the limits aforesaid have been frequently put to considerable expenses, occasioned by the neglect of the inhabitants, as well lodgers and inmates as

housekeepers, in not causing their chimneys to be duly swept, by means whereof alarms of Fire are frequently made, to the great terror and danger of His Majesty's subjects, which might and ought and prob. would be prevented if such inhabitants were obliged to defray and bear the charges and expenses attending such their neglects, or some reasonable part thereof.

It is then enacted that after 24 June, 1772, the rewards to turncocks, fire engines, etc., are to be defrayed by inhabitants and occupiers of the house or apartment to which the chimney belongs.

Parishes might have two or more engines; to be provided out of poor-rates. Watermen not to be impressed. Same provisions as to application of money by the ins. offices to rebuilding, etc. As to fires by negligence, fine of £100 or imprisonment. No action to lie for accidental fires.

The provisions of the 4th and 6th of this reign made conformable to this present Act. Former Acts, so far as related to party-walls, repealed.

In this year also was passed 12 Geo. III. c. 61 (1772)—*An Act to regulate the making, keeping and carriage of Gunpowder within Gt. Brit., and to repeal the laws heretofore made for any of those purposes.* The details of this measure we have already given under EXPLOSIVE SUBSTANCES. This measure remained in force down to 1860. [GUNPOWDER.]

1774.—Was enacted 14 Geo. III. c. 78—*An Act for the further and better regulation of buildings and party-walls, and for the more effectually preventing mischiefs by fire within the Cities of Lond. and West. and the Liberties thereof, and other the parishes, precincts, and places within the Weekly B. of Mort.; the parishes of St. Mary-le-Bone, Paddington, St. Pancras, and St. Luke at Chelsea in the Co. of Middlesex; and for indemnifying under certain conditions builders and other persons against the penalties to which they are or may be liable for erecting buildings within the limits aforesaid contrary to law.*

This Act divided all buildings into 7 rates or classes, and proceeded to define thickness of the external and the party-walls for each class, with other details, such as what recesses and what openings may be in party-walls; and how ends of beams may be laid into them; as also for what purposes they might be cut into; and regulations as to chimneys in same. Regulations as to party-walls not extended to the Inns of Court. Rules laid down as to hearths and ovens, etc. No bow windows to extend beyond the line of street. No stack of warehouses to be "above 35 squares, including internal and external walls." Stone doorcases and iron doors to all communications through party-walls of this class. No stable to contain more than 25 squares. Same provisions as before as to turpentine. Every building not erected pursuant to the requirements of this Act to be deemed a nuisance, and to be taken down by order of the Court. The Court of Aldermen to appoint surveyors "skilled in the art of building" to fill the office of district surveyors in view of enforcing the provisions of this Act. Outside the City the Justices in Quarter Sessions to make the appointment (sec. 62). [SURVEYORS, DISTRICT.] This appointment of building surveyors was a new and important feature.

Then follow the provisions of sec. 75, which we have already given under FIRE BRIGADES.

The remaining clauses of the Act only re-enact such provisions as were contained in the preceding Acts already quoted, except as to sec. 89, under which prosecutions against builders under the 12 Geo. III. c. 73 were to be discharged upon the builders amending buildings to the satisfaction of district surveyors appointed under this Act.

This Act, which remained in force 70 years, formed the basis for the present Metropolitan Building Act.

This year, among the usual items of expenditure voted by Parl., there was the sum of £2500 to David Hartley, Esq., to assist him in his experiments upon an invention for securing buildings and ships from fire, *vide* 14 Geo. III. c. 85, sec. 24. "Any sum or sums of money not exceeding £2500 to be paid to David Hartley, Esq., towards enabling him to defray the charge of experiments, in order to ascertain the Practicability and Utility of his Discovery of a method to secure Buildings and Ships from Fire, and that the same be paid without fee or reward."

1777.—There was enacted 17 Geo. III. c. 6.—*An Act for vesting in David Hartley, Esq., his executors, administrators, and assigns, the sole use and property of a certain method by him invented of securing buildings against the calamities of fire throughout His Majesty's dominions for a limited time,*" regarding which we have given a full account under FIRE-PROOF BUILDINGS, 1722 to 1785.

1785.—Was enacted 25 Geo. III. c. 77—*An Act to amend so much of an Act passed in the 14th year of the reign of his present Majesty, for the further and better regulation of buildings and party-walls; and for the more effectually preventing mischiefs by Fire within the Cities of Lond. and West. and the Liberties thereof, and other the places therein mentioned, as relates to manufactories of turpentine; for extending the provisions of the said Act so amended to manufactories of pitch, tar, and turpentine, throughout that part of Gt. Brit. called Eng.; and for indemnifying the proprietor of a turpentine manufactory in Potter's Fields, in the Borough of Southwark, against the penalties he may be liable to under the said Act; and for excepting for a limited time his said manufactory from the provisions herein contained.* This Act recited that the distance of 50 feet from other buildings provided by the Act of 1774 "is too small for the effectually preventing of accidents by fire from such manufactories." It then enlarges the distance from other buildings to 75 feet, and extends the same regulations to manufactories of pitch and tar. The limit of 10 gallons still maintained ; as also the exception in favour of ship-yards—penalty £100.

1790.—This year was pub. : "*Reflections occasioned by the Frequency of Fires in the Metropolis ; with Thoughts on Measures for Adding to the Public Security, and Remarks on the Law of Arson.*" By Philanthropos [? Mr. J. T. Barber Beaumont, founder of County Fire Ins. Co.]

1791.—A fire-watch or fire-guard, as it was variously termed, was again estab. in Lond. in Nov. of this year. It was the commencement of an organized F. Brigade, and we have given an account of it under FIRE BRIGADES.

1792.—A number of Lond. architects formed an asso. for the purpose of investigating the causes of the numerous fires, amongst whom were Bonomi, Carr, Dance, Jupp, Revett, Soane, etc. ; and they came to the conclusion that *good party-walls* were the best means of confining the fire to one house ; and that therefore other practicable and not expensive means might be devised by which a fire might be confined to one room in a house.—*Young.*

Some of the proposals which followed, as a consequence upon this investigation, have already been set forth in our chap. on FIRE EXTINGUISHMENT.

1793.—There was pub. : *Resolutions of the Associated Architects, with the Rep. of the Committee by them Appointed to Consider the Causes of the Frequent Fires.*

1806.—A patent under the Gt. Seal of England was granted to Ambrose Bowden Johns for a substance called "Tessera" to be used as a means of protecting buildings from fire. (See 1810.)

1809.—Sir Wm. Congreve patented improvements affording security against fire. [These have been described under FIRE EXTINGUISHMENT, date 1812.]

Same year Charles Norton obtained a patent for a similar purpose.

1810.—There was passed the "Local and Personal" Act, 50 Geo. III. c. lxxv.—*An Act to amend an Act of the fourteenth of his present Majesty for the better regulation of buildings and party-walls, and for the more effectually preventing mischiefs by Fire within the Cities of London and Westminster, by permitting Johns' Patent Tessera to be used in the Covering of Houses and Buildings within the places therein mentioned.*" It recites the provisions of the former Act as to the substances by which buildings might be covered. It also recites that a patent had been granted on 22 Dec. 1806, to Ambrose Bowden Johns for his newly invented composition ; and that such composition had been found useful and safe for the purposes named, and not liable to catch fire ; and hence its use was authorized ; but it was not to contain a greater quantity of tar or other bituminous substance than was named in the Schedule of the Act. By what influence this Act was obtained has been and still remains a mystery. [JOHNS' PATENT TESSERA.]

1820.—In a prosp. of the *Sun* F. dated 24 June, this year, is contained the following notice :

> And for the further encouragement of persons insuring, this Office is provided with several Land Fire Engines, also two powerful F. Engines which float on the River Thames ; and there are employed in the service of the said Office a number of Engineers and Firemen, to work the said Engines ; and also there is a Night-Patrol estab., each with a watch-box, with the words Fire-Patrole, and a Sun illuminated, in different stations, to whom the public may apply in case of alarms or fires, at all hours of the night, which tends greatly to the public security. The Firemen and Patrole are clothed in blue liveries, wearing silver badges, with the *Sun* mark.
>
> The *Sun* F. Office having at their sole expense, and unconnected with any other office, estab. a Fire Night Patrole, for the purpose of preventing fires, and giving the earliest assistance whenever this happens ; the public is hereby informed, that the stands for the Patrole men are situated as underneath, where the public are requested to give the earliest information in case of accident.

Then follow the addresses of the 10 land stations ; and of the 2 floating engines, the *Trafalgar-float*, moored off Surry-stairs, Strand ; and the *Sun-float*, King's-stairs, Rotherhithe.

1824.—There was projected the *Patent Fireproof Paint Asso.*, which set forth in its prosp. that a patent had been obtained for a composition which most effectually prevented the most combustible substances from taking fire ; and which might be used as common paint. (See FIREPROOF PAINT.)

1829.—The important event of this year in regard to F. Protection was the bringing into use of the *first steam fire-engine.* This was manufactured in Lond. ; and although an event early in the following year—the fire at the Argyle Rooms—showed its value and efficiency, it was a long time before the invention was made further available in practice. [FIRE ENGINES, STEAM.]

1830.—There was enacted 11 Geo. IV. c. 27—*An Act to make Provision for the Lighting and Watching of Parishes in E. and W.*—under the provisions of which, on the application of any 3 inhabitants, the churchwardens were to convene a meeting to determine whether the provisions of such Act should be extended to such particular parish. In the event of its being so determined, inspectors were to be appointed, and paid out of a special rate to be made for the purposes of the Act :

XXXII. And be it further enacted, That it shall be lawful for the said inspectors, and they are

> hereby required from time to time to provide and keep up fire engines, with pipes and other utensils proper for the same, for the use of the parish adopting the provisions of this Act, and to provide a proper place or places for the keeping of the same, and to place such engines under the care of some proper person or persons, and to make him or them such allowance for his or their trouble as may be thought reasonable; and the expenses attending the providing and keeping of such engines shall be paid out of the money authorized to be received by the inspectors under the provisions of this Act.

This was the first general measure for providing the means of Fire Protection which had been passed.

This year Mr. James Braidwood, then Master of the Fire Engines in Edin., pub. a work: *On the Construction of Fire Engines and Apparatus, the Training of Firemen, and the Method of Proceeding in Cases of Fire.* This we believe was the first work pub. in the English language on the subjects treated of. We have already mentioned this work under various heads; but there is one passage which, as coming from so experienced an authority, cannot be too carefully considered: "*As almost all fires arise from carelessness in one shape or another, it is of the utmost importance that every master of a family should persevere in rigidly enjoining, and enforcing on those under him, the necessity of observing the utmost possible care in preventing such calamities.*" [FIRE BRIGADES.] [FIRE EXTINGUISHMENT.]

1833.—By the 3 & 4 Wm. IV. c. 90, the last-named Act was repealed, but only for the purpose of re-enacting it in a more complete and extended form. The new Act also applied to the whole of E. and W., and contained the same provisions as those recited from the preceding Act; and also power to appoint watchmen and provide them with arms, clothing, etc. Its provisions were not compulsory. (See 1865.)

In this same year an equally important event, as concerning the protection of the metropolis, occurred, in the founding, after several ineffectual attempts, of the "London Fire Engine Estab.," of which some account has already been given under FIRE BRIGADES; and of which full details will be given under LOND. FIRE ENGINE ESTAB.

1834.—On the 16th Oct. the Houses of Parl. were destroyed by fire. It became very manifest in connexion with this casualty, that the force of the Lond. Fire Engine Estab. was quite unequal to cope with catastrophes of such magnitude. The following communication [dated 9 Dec. 1834] was in consequence addressed to the Duke of Wellington, then chief of the Gov. *pro tem.*, and by him transmitted to the Home Office:

> The Committee appointed by the undersigned Ins. Cos. to conduct their united Engine Estab. in the metropolis, having had under consideration the Rep. made to them by the Supt., Mr. Braidwood, on the occasion of the recent destruction by fire of the two Houses of Parl., beg leave to call your Grace's attention to the actual state of the public means for arresting the progress of such calamities.
>
> The engines and men employed by the fire ins. cos., although always ready and anxious to afford all the assistance in their power upon every occasion of fire, are nevertheless private estab., maintained for the immediate purpose of protecting the interest of their employers. They still form the main security of the public against the spread of fires; but where their service might require to be absorbed in the protection of the peculiar interests of the ins. cos., the uninsured portion of the public and the Gov. works must necessarily be left to the care of other engines.
>
> Thus, if during the late conflagration at Westminster, any insured property in danger, or any simultaneous fire or fires in other parts of the town, had imperatively called upon the Supt. to devote the services of the engines elsewhere, Westminster Hall and the public property adjoining must have shared the fate of the two Houses of Parl.
>
> The only provision made by law for the suppression of fires will be found in the 14 Geo. III. c. 78, sec. 74. By this Act parishes are directed to maintain engines in an efficient state; but the experience of this Committee justifies them in stating, that neither the power of the engines, nor the means of prompt attendance, nor the independent and unsystematic plan upon which they are worked, will ever enable them to render any very effective service, unless they should be placed under some general superintendence, and more especially be restrained on some occasions from placing themselves in the way of the more effective engines of the offices, and exhausting their supply of water.
>
> Though it is scarcely within our province to intrude on His Majesty's Gov. any suggestions for remedying these defects, we nevertheless (having judged it highly important to request your Grace's attention to them at a time when recent events have strikingly exemplified their existence) venture to state generally our views on the subject. With great deference, therefore, we give our opinion, that many of these evils would be corrected merely by placing the parochial engines under the inspection of the Commissioners of Police, as to their repair and efficiency for service (the fine of £10 imposed by the Act above referred to on the churchwardens for neglect in this particular, appearing sufficient if rigidly inforced), and by placing the public and parochial engines at fires under the orders of one directing officer.
>
> We shall be ready to afford to your Grace any information on this subject in our power. . . . .

This was signed by the representatives of the associated offices; and its receipt was acknowledged by the Hon. Henry Goulburn, in a letter dated "Whitehall, 28 Feb. 1835," wherein occurs the following passage:

> I beg to assure you in reply, that I am not disposed to deny that there are cases of fire in which arrangements which you recommend might be productive of beneficial consequences; but nevertheless it appears to me that in the majority of instances, the interference of Gov. would be productive of little benefit, while it might and prob. would relax those private and parochial exertions which have hitherto been made with so much effect and so much satisfaction to the public.

The subject thus passed out of sight for the moment.

There was passed the 4 & 5 Wm. IV. c. 35 (1834), on the subject of Chimney Sweepers and Chimneys. There are in that Act most important clauses on the construction of chimneys; but the greater portion of it relates to chimney sweeps. Many of the regulations laid down in this Act were amended by the 3 & 4 Vict. c. 85. (See 1840.)

1835.—There was passed the 5 & 6 Wm. IV. c. 50—"The General Highway Act," sec. 72 of which provides that if any person shall (*inter alia*) "make or assist in making any fire, or shall wantonly fire off any gun or pistol, or shall set fire to or wantonly let off or throw any squib, rocket, serpent, or other firework within 50 feet of the centre of such carriage-way or cart-way," pay a fine not exceeding 40*s.* over and above the damage occasioned thereby.

1837.—There was enacted 7 Wm. IV. & 1 Vict. c. 89—*An Act to amend the Laws relating to burning or destroying Buildings and Ships*—wherein it is provided that any person setting fire to a dwelling-house, any person being therein, should be deemed guilty of felony, and, if convicted, suffer death. Or setting fire to a church, chapel, house, warehouse, etc., should be guilty of felony. The same as to setting fire to ships with intent to destroy them. [Repealed by 24 & 25 Vict. c. 95; and new provisions enacted by 24 & 25 Vict. c 97.]

1838.—There was enacted 1 & 2 Vict. c. 75—*An Act to amend so much of the Act of the* 25 *Geo. III. for the further and better regulation of Buildings and party-walls, and for the more effectually preventing mischiefs by Fire, within the Cities of Lond. and West., as relates to manufactories of pitch, tar, and turpentine.* The amendment is this, that under the Act of 1785 the buildings used must not be within 75 feet of any other building; it was made within 75 feet of a building in any other occupation.

1840.—The Chimney Sweepers Regulation Act, 3 & 4 Vict. c. 85, which applies to Gt. Brit. and Ireland, contains a provision for the improved construction of chimneys and flues for the better security from accidents by fire, which we have set out in full under CHIMNEYS.

1843.—There was enacted 6 & 7 Vict. c. cix. (local)—*An Act for the better protection of property in the Borough of Liverpool.* The preamble says, "Whereas fires in warehouses in the Borough of Liverpool have of late years been of frequent and alarming occurrence, and have been attended with considerable loss of life and property. . . . And whereas it is expedient that improvements in the construction of warehouses, the better to protect such buildings and the property stored therein from fire, should be effected; and that other provisions should be made for the better prevention of fires in the Borough, and that for such purpose the said police rate should be increased, and the said recited Act [6 & 7 Vict. c. cix. (local)] amended." We need only notice a few of its leading provisions:

> 5. And be it enacted, That all warehouses hereafter to be built or rebuilt within the Borough shall be built or rebuilt, and all add. to any warehouse within the Borough which shall be hereafter made shall be made, according to the restrictions and regulations in this Act contained, save such as expressly apply to fireproof warehouses, or warehouses for particular goods or trades, and also according to the restrictions and regulations contained in the Schedule (A) to this Act annexed, and in full compliance therewith subject thereto according to the regulations of an Act passed in the 5th year of her present Majesty's reign, entituled *An Act for the promotion of the health of the inhabitants of the Borough of Liverpool and the better regulation of buildings in the said Borough.* And all such warehouses shall be built or rebuilt, and all such add. to any warehouse shall be made, with good materials of sufficient strength, and in a substantial and workmanlike manner; and in case any default shall take place in such compliance with the restrictions and regulations of this Act and the said Schedule (A) contained, save as aforesaid, every such warehouse shall be dealt with and taken down or altered as hereinafter provided.
>
> 6. And be it enacted, That no warehouse shall hereafter be erected within the Borough the area of which, including and being measured according to regulation 1 of the said Schedule (A), shall exceed 4000 superficial square feet.

Present warehouses to be made conformable with this Act before they can be regis. (sec. 7). Warehouses only to be erected at certain distances from other buildings (22). Regulations as to buildings to be deemed fireproof warehouses (23). [Clause given in extenso under FIREPROOF BUILDINGS.] In case of ins. offices electing to restore or rebuild after damage by fire, the difference in cost occasioned by requirements of this Act to be provided by the insured (25). Certain goods not to be stored in any but fireproof warehouse or room, viz. "ardent spirits and preparations thereof, oil of any kind (palm or cocoa nut oil excepted), turpentine, rosin, tar, pitch, naphtha, varnish, fireworks, matches, brimstone, sulphuric and other mineral acids, and all chemicals of an inflammable nature" (26). Certain trades not to be carried on except in fireproof warehouses, viz.:

> Ship chandler, marine store dealer, painter, plumber, glazier, oilman, colourman, anchorsmith, blacksmith, whitesmith, ship bread baker, sailmaker, blockmaker, joiner, cabinet maker, or cooper, or the bottling of wines, spirits, beer, or other liquor, unless such warehouse shall from the foundation up to and inclusive of the arching over any room used for such trade be built according to the regulations in this Act, and in Schedule (A) contained, with regard to a cellar or room (not being the room immediately under the roof) in fireproof warehouses; nor shall it be lawful for any person to carry on in any place other than a building detached by 75 feet from any other building the trade, business, or employment of the boiling of oil, blubber, or tar, or the distilling of turpentine, or the manufacturing of vegetable or mineral naphtha or of varnish.

Penalty for offence not to exceed £10 per week during default (27). Certain dangerous trades not to be carried on in buildings within 20 yards of warehouses unless chimneys of buildings be carried up 5 feet above the roof of every warehouse within the 20 yards, viz.:

> Ironfounders or engine manufacturers, chain or anchor-smiths, brass or coppersmiths or founders, smiths or nail makers, or smelters, metal refiners, casters of sheet lead, manufacturing chemists, lucifer, congreve, promethean or other match makers, colour manufacturers, distillers or rectifiers, vitriol makers, tallow melters or candle makers, tobacco pipe makers, potters, timber storers, ship-bread bakers, sugar refiners, herring, bacon or ham curers, soap makers, sulphur refiners, tin workers, glass manufacturers, varnish makers, or tar boilers, or the dying of cotton in kilns (28).

Fire Committee may direct chimney of buildings in which dangerous trades are carried on to be heightened (29). Future warehouses not to be erected within 20 yards of any building used for dangerous trades (33). Saltpetre and nitrate of soda not to be stored except in certain warehouses (34). Parapet walls, doors and windows to be repaired on notice (35). Registry of warehouses to be kept:

> 40. And be it enacted, That the Committee for the preservation of property from fire shall cause a registry to be kept in the office of the Town Clerk of every warehouse which shall be built, or rebuilt, or altered, conformably to the restrictions and regulations of this Act, and of the said Schedules (A and B), or either of them, in which registry the said warehouses shall be classed in manner following (that is to say);
>
> 1. Fireproof warehouses under this Act. 2. Warehouses which shall be made conformable in every respect to the regulations and restrictions of this Act, and Schedule (A), save only as to the provisions of this Act which are exclusively applicable to fireproof warehouses or warehouses for particular goods or trades; and 3. Warehouses which shall not be so conformable, but which shall be made conformable to Schedule B. And the Council shall cause such registry at the expiration of 3 months from the commencement of this Act and thereafter annually, or if they think proper oftener, to be pub. in 2 or more of the Liverpool newspapers. Provided, That in case any warehouse entered upon such registry in any of the said classes shall not at any time thereafter be conformable to the restrictions and regulations applicable to such class, the same shall be expunged from such class, and shall not be again placed therein, until the same shall be made conformable to the regulations and restrictions applicable to such class.

Council empowered to license warehousemen and porters (59). Licences may be revoked for misconduct (60). Watch Committee authorized to appoint warehouse constables (82). Warehouse fire police rate may be levied (89).

1844.—Was enacted the 7 & 8 Vict. c. 62—*An Act to amend the Law as to burning Farm Buildings*—wherein it is declared that any person unlawfully and maliciously setting fire to any farm building, or to farm produce or implements in farm buildings, should be deemed guilty of felony. [Act repealed by 24 & 25 Vict. c. 95; and fresh provisions enacted by 24 & 25 Vict. c. 97.]

Same Session there was enacted 7 & 8 Vict. c. 84—*An Act for regulating the construction and the use of Buildings in the Metropolis and its neighbourhood.* This, generally known as Lord Lincoln's Act, was in substitution of the 14 Geo III. c. 78 (1774), but did not repeal the clauses of that Act so far as they related to fire engines, etc. The present measure related to the construction of houses and buildings mainly; but it also extended to dangerous trades. As, however, all its clauses were repealed by the 18 & 19 Vict. c. 122 (1855), except those which we have already given under DANGEROUS TRADES, we do not propose to dwell upon them here. It was this Act which provided that certain businesses noxious as regarded health were to be removed from the City within 30 years (1874). Unfortunately this provision was in great part evaded, as we shall see under date 1874. Again, it was this Act which prohibited the occupation of cellars or rooms unfit for dwellings. [HOUSES.]

Under this Act the offices of (1) Official Referees, and (2) Registrar of Metropolitan Buildings, were erected. But they were swept away by the Act of 1855.

By this Act too was apparently substituted the principle of estimating the dimensions of buildings by their cubical contents, instead of as before by their superficial area. Mr. Braidwood, in his paper read before the So. of Arts in 1856, attributed a great deal of mischief to this change.

The *First Rep. of the Commissioners for Inquiring into the State of Large Towns and Populous Districts* was pub. this year. It is a document of great interest. One of the questions remitted to the Commissioners to report upon was "The supply of water in such towns and districts, whether for the purposes of health, or for the better protection of property from fire." Under FIRE EXTINGUISHMENT we have already quoted largely from this Report.

1845.—Mr. T. Chambers and Mr. G. Tattersall pub.: *Laws relative to Buildings, comprising the Metro. Building Acts, Fixtures, Ins. against Fire, etc.*

1846.—There was enacted 9 & 10 Vict. c. 5—*An Act to amend an Act for regulating the construction and use of Buildings in the Metropolis and its neighbourhood.* This measure relates mainly to the appointment of official referees of Metropolitan buildings in regard to duties thrown upon these officials by the Act of 1844.

Same Session there was enacted 9 & 10 Vict. c. 25—*An Act for preventing malicious injuries to persons and property by Fire, or by explosive or destructive substances.* Its preamble says: "Whereas the unlawful and malicious destruction of buildings, and attempts to injure persons and property by fire or by gunpowder and other explosive or destructive substances, is not adequately punishable by law." It then enacts that persons maliciously blowing up dwelling-houses, any one being therein, or blowing up buildings with intent to murder, or injuring persons by explosive substances, or attempting to do bodily injury by sending, etc., dangerous substances, shall be deemed guilty of felony. Some other of its provisions we shall notice under FIRES CAUSED WILFULLY. [Repealed by 24 & 25 Vict. c. 95; new provisions 24 & 25 Vict. c. 97.]

1847.—In the "Towns Improvement Clauses Act, 1847," 10 & 11 Vict. c. 34 (England and Ireland), passed for the incorp. by reference of uniform provisions of the nature following in all subsequent special Acts, it is enacted by sec. 109:

> The party-walls of all buildings erected after the passing of the special Act, within the limits thereof, shall be carried through and above the roof, to form a parapet of not less than 12 inches in

> height, measured at right angles with the slope of the roof, above the covering of the roof of the highest building to which such party-walls belong; and all such party-walls, and the external walls of all buildings erected after the passing of the special Act, in or near any street or within the curtilage of any house adjoining any street, shall be constructed of incombustible materials, and the coverings of the roofs thereof shall not, without the previous consent in writing of the Commissioners, be constructed of combustible materials.

No roof covered with thatch or other combustible material to remain for a longer period than 7 years after the passing of the special Act, without consent in writing of the Commissioners.

Same Session there was enacted 10 & 11 Vict. c. 89—*The Town Police Clauses Act*—which provides that in districts where the Public Health and Local Government Acts are applied, or places under any Local Act with which the provisions of the Police Clauses Act with respect to fires are incorp., any person wilfully setting fire to any chimney is liable to a penalty not exceeding £5; but not thereby to be exempted from indictment for felony (sec. 30). Penalty not exceeding 10*s.* for carelessness, whereby any chimney accidentally catch fire (sec. 31). The Local Board of Health may provide fire engines, buckets, pipes, escapes, etc., and employ firemen (sec. 32); and may send the same beyond the district at the expense of the owner of the premises on fire, to be determined by two Justices (s. 33). [FIRE EXTINGUISHMENT, EXPENSES OF.] The Board must also cause fire-plugs, with all necessary works, and water in connexion therewith, to be provided and maintained, and indicate the situation thereof on the neighbouring walls. [FIRE BRIGADES.]

1848.—There was enacted 11 & 12 Vict. c. 63—*An Act for promoting the Public Health*—wherein was contained a number of provisions more or less generally analogous to those we have been reviewing; but none of them so specific as to require special mention here.

Mr. Wm. Hoskings, Architect and Civil Engineer, pub.: *A Guide to the Regulation of Buildings as a means of securing the Health of Towns*, wherein he gives a description of the plan followed in *Paris*, in forming partitions, floors, etc. He remarks that floors are constructed in Nottingham in a similar manner; and the houses are said never to burn. They are also free from damp and vermin.

The *Paris* floors, ceilings, partitions, staircases, etc., have all the hollow places filled in with a concrete composed of rubble stone and plaster of Paris, by which means each portion of the building is made soundproof, and the spreading of fire prevented. The importance of making all the parts of a building usually left hollow air-tight, so as to prevent the formation of a current of air to feed the fire, if unfortunately a house should become ignited, is too self-evident to need lengthened comment.

The method of constructing even the best houses in England is so slovenly and negligent as regards the floors and the adoption of *any means* of preventing the spread of fire, that the chances are always in favour of instead of against the probability of fire.

1850.—Mr. Samuel Brown, in a paper: *On the Fires in Lond. during the* 17 *Years from* 1833 *to* 1849 *inclusive, showing the Numbers which occurred in different Trades, and the principal Causes by which they were Occasioned*, speaks of the London F. Brigade, "whose extraordinary efficiency, under the training and superintendence of Mr. Braidwood, have frequently saved an enormous amount of property which seemed destined to be the inevitable prey of the flames"—adding:

> The skill and the intrepidity of the chief and the exertions of the men have preserved this great city from calamities, which in such a mass of buildings, occupied by many hazardous trades, in some cases full of combustible materials, and in some parts of the City exposed from age and nature of construction to the most fearful conflagration, if a fire once begins, it is most surprising that we should so long continue to escape. It is still more creditable that such a body of men, so organized, so devoted to the public service, so zealous and intelligent, should be paid and supported, not, as in other countries, by the Gov. for the good of the State, which it undoubtedly is, but by the combined efforts, the wealth and the public spirit of the private cos. These could not have been blamed if they had left the public to the tender mercies of the Gov. protection. Their peculiar bus. was not to diminish, but to indemnify against loss; and if the risks were greater, the public must have paid an adequate prem. But happily they have taken a nobler view of their responsibilities, and the estab. of their valuable brigade has tended as much to the service of humanity as to the interests of the cos. themselves. It is at the same time a standing reproof to the Gov. of this country that the protection which we owe from the ravages of fire is due to the mere casualties of private enterprise, and that if any cause tended to the disunion of the cos., or if the effects of competition led those who are old estab. to think the force too costly to maintain for the benefit of the new, a City with two millions of inhabitants would be left to the notorious inefficiency of parish engines, or the desultory efforts of individuals impeding each other.

In this same paper Mr. Brown ventured to suggest whether the Electric Telegraph might not be utilized in regard to giving prompt notice of fires to brigades, etc.! This fact stands as a landmark in regard to what has been accomplished in this respect during the quarter of a century next succeeding. [FIRE CALLS.]

1852.—There was enacted 15 & 16 Vict. c. 84—*An Act to make better provision respecting the Supply of Water to the Metropolis*—under sec. 15 of which is contained provision for a constant supply of water by every Metropolitan Co. This arrangement was not carried out, and hence the Amending Act of 1871.

1854.—About this date Mr. James Braidwood read before the Inst. of Civil Engineers a paper: *On the Means of rendering large Supplies of Water available in Cases of Fire; and on the Application of Manual Power to the Working of Fire Engines.* An abstract of this paper and the discussion upon it were afterwards pub.

The *Quarterly Review* for Dec. of this year contained an interesting art. on the subject of Fire Protection in its several aspects. We must be content with the following suggestive passages from it:

> When we recollect that Lond. presents an area of 36 sqr. miles covered with 21,600 sqr. acres of bricks and mortar, and numbers more than 380,000 houses; that all the riches it contains are nightly threatened in every direction by an ever-present enemy; that the secret match, the spontaneous fire, and the hand of the drunkard, are busily at work; it is evident that nothing but a force the most disciplined, and implements the most effective, can be competent to cope with so sudden and persevering a foe. As late as 22 years ago there was no proper fire police to protect the metropolis against what is commonly called the "all-devouring element." . . . .
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> In most continental cities a watchman takes his stand during the night on the topmost point of some high building, and gives notice by either blowing a horn, firing a gun, or ringing a bell. In *Germany* the quarter is indicated by holding out a flag towards it by day, and a lantern at night. It immediately suggests itself that a sentinel placed in the upper gallery of St. Paul's would have under his eye the whole metropolis, and could make known instantly, by means of an electric wire, the position of a fire, at the head station at Watling St., in the same manner as the Americans do in Boston. This plan is however open to the objection, that Lond. is intersected by a sinuous river, which renders it difficult to tell on which bank the conflagration is raging. Nevertheless we imagine that the northern part of the town could be advantageously superintended from such a height, while the southern half might rest under the surveillance of one of the tall shot-towers on that bank of the Thames. The bridges themselves have long been posts of observation, from which a large proportion of the river-side property is watched. Not long ago there was a fireman on London Bridge, who eked out a precarious existence by keeping a good look-out up and down the stream.
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> Watling St. was chosen as the head-quarters of the Fire Brigade for a double reason: it is very nearly the centre of the City, being close to the far-famed Lond. Stone; and it is in the very midst of what may be termed, speaking igneously, the most dangerous part of the metropolis—the Manchester warehouses. As the Fire Brigade is only a portion of a vast commercial operation—Fire Ins.—its actions are regulated by strictly commercial considerations. Where the largest amount of *insured* property lies, there its chief force is planted. It will it is true go any reasonable distance to put out a fire; but of course it pays most attention to property which its proprietors have guaranteed. The central station receives the greatest number of "calls"; but as a commander-in-chief does not turn out for a skirmish of outposts, so Mr. Braidwood keeps himself ready for affairs of a more serious nature. When the summons is at night—there are sometimes as many as half-a-dozen—the fireman on duty below apprises the Supt. by means of a gutta-percha speaking-tube, which comes up to his bedside. By the light of the ever-burning gas he rapidly consults the "Lond. Directory"; and if the call should be to what is called "a greengrocer's street," or any of the small thoroughfares in bye-parts of the town, he leaves the matter to the fireman in whose district it is, and goes to sleep again. If however the fire should be in the City, or in any of the great West End thoroughfares, he hurries off on the first engine. Five minutes is considered a fair time for an engine "to horse and away," but it is often done in three. Celerity in bringing up aid is the great essential, *as the first* half hour generally determines the extent to which a conflagration will proceed. Hence the reward of 30*s*. for the first, 20*s*. for the second, and 10*s*. for the third engine that arrives, which prems. are paid by the parish.

1855.—There was enacted the 18 & 19 Vict. c. 122—*An Act to amend the Laws relating to the Construction of Buildings in the Metropolis and its neighbourhood*—known generally as the "Metropolitan Building Act." It is divided into 5 parts: 1. Relating to the regulation and supervision of buildings. 2. Relating to dangerous structures. 3. Relating to party structures. 4. Miscellaneous provisions. 5. Repeal of former Acts, and temporary provisions. It is the first part which falls more particularly within our present purpose, and of this we proceed to give an abstract.

Part 1.—Certain buildings, principally of a public nature, are exempted from its operations, as County Lunatic Asylums, Sessions Houses and other County Buildings, etc.; buildings belonging to any *Canal*, Dock, or Railway Co. and used for the purposes thereof, under the provisions of any Act of Parl.; buildings not exceeding 30 feet in height, or in extent 125,000 cubic feet, not being public buildings, wholly in one occupation, and distant at least 8 feet from the nearest st. or alley, and at least 30 feet from the ground or buildings of any adjoining owner; buildings not exceeding in extent 216,000 cubic feet, and not being public buildings, and distant at least 30 feet from the nearest st. or alley, and at least 60 feet from the nearest ground and buildings of any adjacent owner; and all party fence walls and greenhouses, so far as regards the necessary woodwork of the sashes, doors, and frames (s. 6).

It relates to the regulation and supervision of buildings, applying both to the erection of new and the alteration of and add. to old buildings, except the necessary repair of the latter, not affecting the construction of any external or party-wall. It provides for the construction of party and other walls, prescribing their thickness, and the mode in which they shall be carried above the roof (ss. 12 to 18); that roofs shall be covered with incombustible materials (19); for the secure construction of chimneys and flues (20); pipes and stoves, enacting that the floor under every oven or stove, used for the purpose of trade or manufacture, and the floor around the same for a space of 18 inches, shall be formed of materials of an incombustible and non-conducting nature; that no pipe for conveying heated air or steam shall be fixed nearer than 6 in. to any combustible materials; that no pipe for conveying hot water shall be placed nearer than 3 in. to any combustible material; that no pipe for conveying smoke or other products of combustion shall be placed nearer than 9 in. to any combustible material; and imposes a penalty of not exceeding £20 for non-compliance (21); that the means of access and stairs in public buildings, and in other buildings containing more than 125,000 cubic feet, and used as a dwelling-house for separate families, shall be of stone or other fireproof material (22); for the formation of arches over and under public ways of incombustible material (24 and 25); that cornices, verandahs, and such-like projections shall be of fireproof material, and the woodwork of shop-fronts placed so as not to endanger the next neighbour (26).

Sec. 27. The following rules shall be observed as to the *separation of buildings, and limitation of their areas.* 1. Every building shall be separated by external or party-walls from any adjoining building. 2. Separate sets of chambers or rooms tenanted by different persons shall, if contained in a building exceeding 3600 square feet in area, be deemed to be separate buildings, and to be divided accordingly, so far as they adjoin vertically by party-walls, and so far as they adjoin horizontally by party-arches or fire-proof floors. 3. If any building in one occupation is divided into 2 or more tenements, each having a separate entrance and staircase, or a separate entrance from without, every such tenement shall be deemed to be a separate building for the purposes of this Act. 4. Every warehouse or other building used either wholly or in part for the purposes of trade or manufacture, containing more than 216,000 cubic feet, shall be divided by party-walls in such manner that the contents of each division thereof shall not exceed the above number of cubic feet.

Sec. 28. The following rules shall be observed as to *existing buildings.* 1. No buildings shall be united unless they are wholly in the same occupation. 2. No buildings shall be united, if when so united they will, considered as one building only, be in contravention of any of the provisions of this Act. 3. No opening shall be made in any party-wall dividing buildings which if taken together would contain more than 216,000 cubic feet, except under the following conditions: (*a*) such opening shall not exceed in width 7 feet, or in height 8 feet; (*b*) such opening shall have the floor, jambs, and head formed of brick, stone, or iron, and be closed by 2 wrought-iron doors, each one-fourth of an inch thick in the panel, at a distance from each other of the full thickness of the wall, fitted to related frames, without woodwork of any kind. 4. Whenever any buildings which have been united cease to be in the same occupation, any openings made in the party-walls dividing the same shall be stopped up with brick or stone work of the full thickness of the wall itself, and properly bonded therewith.

Sec. 29. Every building used or intended to be used as a *dwelling-house*, unless all the rooms can be lighted and ventilated from a street or alley adjoining, shall have in the rear or on the side thereof an open space exclusively belonging thereto, of the extent at least of 100 square feet.

The provisions of the Act are to be carried into force under the supervision of District Surveyors (Building Referees and the Registrar of Buildings being abolished), and these are placed under the control of the Metropolitan Board of Works.

The provisions of the 14 Geo. III. c. 78 (1774) which relate to fire engines and appliances for fire extinguishment are continued by this Act. This Act has been amended by several Acts hereinafter noticed. (See 1860, 1861, and 1869.)

In this same Session was enacted the "Metropolis Local Management Act," 18 & 19 Vict. c. 120, which brought into being the Metropolitan Board of Works, under whose control many of the powers contained in the Acts already recited were destined in due time to fall. The important subject of the drainage of all houses thereafter to be built in the Metropolitan District was remitted by the present Act to this new authority.

1856.—Mr. James Braidwood, then Supt. of the Lond. Fire Brigade, read before the So. of Arts a paper: *Fires; the Best Means of Preventing and Arresting them; with a few Words on Fireproof Structures.* "To prevent fires (he said) it is necessary to consider what are the principal causes of such calamities. These may be classed under several heads:—1. Inattention in the use of fire and lights. 2. Improper construction of buildings, etc. 3. Furnaces or close fires for heating buildings, or for mechanical purposes. 4. Spontaneous ignition. 5. Incendiarism. Under the first head he enumerated a series of causes which we shall speak of in detail under FIRES, CAUSES OF. Adding:

> From what has been said, it will be seen that care and attention may do a very great deal towards the prevention of fire and consequent loss of life. It is very easy to make good rules, and keep them for a time, after having been alarmed by some serious loss of property or life; but the difficulty is to maintain constant attention to the subject. The most evident plan for effecting this seems to be, for the masters thoroughly to examine and consider the subject at certain stated periods, not too far apart, and to constantly warn their domestics, workmen or others, of the danger of the improper use of fire and lights.

He considers that one of the greatest preventitives of carelessness in the use of fire and lights would be a legal inquiry in every case, as it would not only show the faults that had been committed, and thus warn others, but the idea of being exposed in the newspapers would be another motive for increased care. [FIRE INQUESTS.]

Under the 2nd head he says, the improper construction of buildings more generally assists the spread than is the original cause of fires; although lying hearths on timber, and placing timber too near flues, are constant causes of fire. He adds:

> It is necessary to state here, that the intensity of a fire, and the risk of its extending to other buildings, depends, *ceteris paribus*, on the cubic contents of the building which takes fire. Manchester, and piece-goods warehouses have for some time past been built of unlimited size—sometimes equal to 20 average houses. This is pretty nearly the same as if that number of houses were built without party-walls, only that it is much worse: for the whole mass generally communicates by well-holes

> and open staircases, and thus takes fire with great rapidity; and from the quantity of fresh air within the building the fire makes much greater progress before it is discovered. By this means the risk of a fire in the City has been greatly increased: not only to such warehouses themselves, but to the surrounding neighbourhood: for it is impossible to say how far fires of such magnitude may extend their ravages under untoward circumstances: *there being at present no preventitive power in Lond. capable of controlling them.* To provide such a power would be a very costly business.

He was of opinion that the Building Act of the preceding year was likely to repress to a certain extent this great evil, "unless its meaning be subverted by some such subterfuge as destroyed the efficiency of the last one"—this was in reference to warehouses where "bulk was broken" by partial division walls, and hence they were held not to be warehouses within the meaning of the Act. But as the Act was only prospective, he asks, "What is to be done with those already built? It may seem tedious to dwell so much on this subject; it appears to be a risk which is not generally thought much of, though it is of the most vital importance to the safety of Lond. It is very desirable that the metropolis should take warning by the experience of Liverpool, without going through the fiery ordeal which that city did."

He passes to the 3rd head, where he says, heating by hot air, steam, and hot water is objectionable—

> First, because there must be a furnace and furnace flue, and the flue used is generally that built for an open fire only. And second, the pipes are carried in every direction to be as much out of sight as possible. By this means they are constantly liable to produce spontaneous ignition, *for there appears to be some chemical action between heated iron and timber, by which fire is generated at a much lower temperature than is necessary to ignite timber under ordinary circumstances.* No satisfactory explanation of this fact has yet been given, but there is abundant proof that such is the case. [HOT WATER PIPES.]

Another cause of fires which came under this head, he said, was the use of pipes for conveying away the products of combustion—he here referred more particularly to GAS; and his remarks will therefore be given under that head. The heat given out by gas he considers very much increases the risk of spontaneous ignition. Furnaces he considers a very constant source of danger—the more so that the original fireplace is sometimes not large enough to contain them, and the party-wall is then cut into.

We pass to the 4th head—Spontaneous ignition. This he says is believed to be a very fruitful cause of fires. We shall find it more convenient to discuss this part of the subject under its proper head. [SPONTANEOUS IGNITION.] Dust-bins, he said, very often caused serious accidents; in one instance £30,000 to £40,000 were lost, apparently from hot ashes being thrown into a dust-bin.

As to the 5th head—Incendiarism—he considered it might be divided into 3 sorts—malicious, fraudulent, and monomaniac. These we shall consider under INCENDIARY FIRES.

He next passes to the subject of arresting fires. This part of his paper we have already examined under FIRE EXTINGUISHMENT. Under this last head, too, we have considered the question of water supply.

He then reaches the subject of "Fireproof Construction;" but on this we have already learned his views in our art. FIREPROOF BUILDINGS; while some of his more incidental remarks will be viewed in our art. FIRES, STATISTICS OF. We have thus exhausted one of the few practical papers on Fire Protection which it has been our good fortune to meet with.

There was also enacted the 21 & 22 Vict. c. 98—*An Act to amend the Public Health Act,* 1848, *and to make further provision for the Local Gov. of Towns,* by sec. 46 of which it is provided that the Watching and Lighting Act, 3 & 4 Wm. IV. c. 90 [1833], was to be superseded by this Act, and *(inter alia)* all fire engines, hose, and all other property vested in the Inspectors for the time being under that Act, should on the adoption of this new Act vest in the Local Board.

1860.—There was enacted the 23 & 24 Vict. c. 52—*An Act to alter and amend "The Metropolitan Building Act,* 1855." A few lines of its preamble sufficiently explain its purpose: "Whereas certain rules of the Metropolitan Building Act, 1855, have been found to operate prejudicially by limiting the contents of buildings to be erected as workshops for the manufacture of the machinery and the boilers of steam vessels, and as the increased and increasing size of such machinery and boilers for the Royal and Commercial Marine of this country requires larger areas for their manufacture than are allowed by such rule, it is expedient to amend the said Act." The rules as to cubical dimensions not to apply to buildings used for such purpose situated beyond 3 miles from St. Paul's.

In the same Session was passed 23 & 24 Vict. c. 139—*An Act to amend the Law concerning the making, keeping, and carriage of Gunpowder and compositions of an explosive nature; and concerning the manufacture, sale, and use of Fireworks,* the provisions of which we have already set forth in our art. EXPLOSIVE SUBSTANCES. [GUNPOWDER.]

1861.—On the 22 June broke out the Fire at Cotton's Wharf, in Tooley Street, London Bridge, which speedily extending to adjoining wharves, occasioned the fire which will long be remembered in the annals of the London Fire Offices as "The Tooley St. Fire." The loss of produce and property involved was estimated at £2,000,000, of which a very considerable portion was covered by ins. It was not simply the loss of money to the ins. offices which rendered this fire so impressive. The wharf in which it originated and the others to which it extended were regarded as among the best built in London. If, therefore, a fire could gain so great a hold in buildings of this class, what might not be expected in other quarters? It was in the attempt to prevent the spread of this fire that poor Braidwood lost his life, while several others also fell victims. In the basement of these buildings were large stores of tallow, which, becoming melted, floated out upon the river, and so did literally "set the Thames on fire." The ruins continued to burn for about a month, notwithstanding that great efforts to extinguish them were continuously made, in view of the salvage.

The first effect of this fire upon the practice of the fire offices was to induce a considerable rise in the prems. for mercantile risks. This we have spoken of under FIRE INS. PREMS. Further reflection showed that the prems. were after all but one portion of the real remedy. The main effort must be made in the direction of preventing the recurrence of such casualties in the future. In this view many important meetings of the Committee of Managers took place, and finally there resulted from these deliberations the document which follows. The reduction of prems. to which it refers must be understood to be from the "panic rates" which had immediately followed the fire:

Requirements of the Fire Offices for the improvement of risks and reduction of prems.

1. That no warehouse or shed hereafter built shall contain more than 216,000 cubic feet, and shall be built according to the regulations of the Metropolitan Buildings Act.

2. As respects existing buildings, the cubical contents of which exceed 300,000 feet, the dimensions allowed in connexion with the reduction of prem. shall be subject to special arrangement with the Committee of Offices, who under the advice of their surveyor will take into consideration any special circumstances.

3. That party or division-walls, as they now exist, are to be, or are to be made perfect, without openings in them of any kind, except as provided in condition No. 4, and to be continued through the roof to the height of 5 feet at least above any gutter adjoining, and 3 feet 6 inches above any portion of the said roof."

4. That communication between two warehouses may exist, if approved by the surveyor, either by a gangway of stone, iron or other incombustible material, provided the distance between the openings in the warehouses is at least 5 feet, and that each opening is protected by an iron door set in jambs of incombustible material, or by a stone staircase, if the two warehouses are in the same occupation, provided the entrances or openings be not less than 10 feet apart, and each protected by an iron door hung or set in jambs of incombustible material, and provided in either case that the same is surrounded by an otherwise perfect brick wall of sufficient strength and thickness.

5. That all external spouts or eaves gutters be of incombustible materials.

6. That the roof be covered with slate, tile, metal, or other incombustible material; the pent-house of iron or slate; the cathead of iron, or inclosed within the pent-house by an iron drop.

7. That when two wooden platforms of different wharves adjoin, a division wall of incombustible material shall be built to separate the woodwork of one from the other.

8. That wherever openings in external walls exist in a street, way, or space less than 30 feet wide, wherein other warehouses or buildings of equal or greater risk are within a distance of 30 feet, measured from the two nearest openings, unless the said buildings be on a horizontal line the one with the other, the said openings shall be protected by doors or shutters of iron, hinged on jambs of incombustible material; and all openings which are within a distance of eight feet, measured in a horizontal line from other openings in an adjoining warehouse or building of equal or greater risk, shall be protected by iron doors or shutters as aforesaid; provided nevertheless that in the case of granaries or warehouses, wherein a circulation of air is essential to the preservation of the goods, iron hoppers of approved construction may be substituted for the shutters aforesaid.

9. That provision be made for an ample supply of water on the premises.

10. That a proper classification of merchandize be made, viz.: 1. Saltpetre and nitrate of soda to be deposited only in separate and approved vaults or stores. 2. Hemp, jute, and other fibres not to be deposited in any warehouse with other goods, but in separate and approved buildings. 3. Hazardous and non-hazardous goods not to be stored in the same warehouse. 4. General goods to be stored separately, according to their class.

In the autumn of this year Mr. Easton, the eminent hydraulic engineer, proposed to the Chief Commissioner of Works the construction of a reservoir on Primrose Hill, N.W., to contain 1,000,000 gallons, with main-pipes to lead down from it to Buckingham Palace, to the Royal Mews, and Wellington Barracks, to the Houses of Parl., and to the Gov. offices in and near Whitehall. He stated that the water cos. would gladly bear the charge of keeping the reservoir always supplied with water, provided this supply were exclusively appropriated to the extinction of fires—for under the then existing arrangements the water cos. not only supplied water gratuitously for fire extinguishment, but had their arrangements for domestic supply sometimes greatly interfered with.

He afterwards developed his ideas into a plan embracing the whole metropolis, at an estimated cost of £3,000,000: that is 40 square miles at £72,000 p. mile, with £50,000 a year working expenses for staff and repairs. There would be reservoirs on Primrose and Norwood Hills, with mains permeating all the principal streets of the metropolis; valves or hydrants to any number might be connected with these mains; and as the water would always be at high-pressure, hose screwed on to these valves would at all times obtain a jet powerful enough to go over the highest ordinary buildings. No fire engines would be needed, or only a few for special use. The mains would be entirely distinct from those which furnish the house or domestic supply of water: so that there would unfortunately be a double system of breaking up the roads and streets to lay and repair water-pipes. Mr. Easton proposed that the police should be taught to manage the hydrants, insomuch that wherever a fire might break out, the *matériel* and the *personnel* for its extinction would be close at hand. It was suggested that the work might be done by some public body, which could borrow the £3,000,000 at 4 p.c. An instalment of

£192,000 p.a. would pay off principal and interest in 25 years, and then there would only be the ann. working expenses to provide for.

There was enacted the 24 & 25 Vict. c. 87—*An Act to amend the Metropolitan Building Act* (1855). The amendment consisted in excepting any buildings erected by the Commissioners of the Exhibition of 1851 from the operation of the principal Act.

Same Session there was enacted 24 & 25 Vict. c. 97—*An Act to consolidate and amend the Statute Law of England and Ireland relating to malicious injuries to property*—wherein the punishment for injuries to buildings or goods therein by fire or explosive substances is provided. [FIRES CAUSED WILFULLY.] This repealed the Act of 1846.

1862.—A Select Parl. Committee was appointed "To inquire into the existing state of Legislation, and of any existing arrangements for the Protection of Life and Property against Fires in the Metropolis." On this Committee was Mr. Thomson Hankey (Chairman), Mr. Cowper, Mr. Stephen Cave, Mr. Cubit, Sir Joseph Paxton, Mr. Tite, and others more or less conversant with the subject. Among the witnesses called were Sir Richard Mayne, then Chief of the Metropolitan Police; Captain Shaw, Chief of the London Fire Brigade; Mr. John Drummond, Chairman of the Associated Fire Offices; Mr. W. M. Browne, the Hon. Sec. of the same body; Mr. D. W. Harvey, then Chief of the City Police; Mr. W. Newmarch, then Sec. of the *Globe* Ins. Co.; and Mr. Wm. Baddeley.

We have under various heads, as DOCKS, FIRE BRIGADES, FIRE EXTINGUISHMENT, etc., dealt with portions of the evidence taken. We now propose to reproduce portions of the Report of the Committee:

> 1. Your Committee have endeavoured to obtain the best information as to the actual state of the metropolis and its immediately surrounding parishes, with respect to the protection of the inhabitants, and their property generally, as to the means of extinguishing fires. . . .
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> 3. The area of the Metropolitan Police District includes 217 parishes, with a pop. of about 3,000,000 residing in about 462,000 houses; and the rateable income for taxation is about £13,500,000. The extent is about 16 miles from Charing Cross on all sides. . . . . 4. This is exclusive of the City of London, which includes 97 parishes, with a pop. of about 115,000, inhabiting about 13,500 houses. . . . . 5. Thus the whole of the metropolitan police area and the City of London together, extending over about 700 square miles, may be considered as containing rather above 3 millions of inhabitants, residing in about 475,000 houses, and the rental for taxation about £14,800,000. . . . .
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> 14. It has been admitted by the witnesses who have given evidence before your Committee that the duties of this [the London] Fire Brigade, as far as their means would enable them, have been performed most ably and most efficiently. It has, however, been equally admitted by every witness that the present scale of their staff, engines and stations is totally inadequate for the general protection of Lond. and its immediate vicinity from the dangers of fire. This is admitted by the managers of the Brigade; but as they consider it efficient for the protection of that part of Lond. where the largest amount of insured property is located, they have no desire or intention to add to their expense by placing add. stations where, if a fire occurs, it is not likely to cause such comparative injury to the offices as if it occurred in the water-side warehouses, etc., near the City. . . . .
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> 20. The arrangements generally made by the parishes in the older parts of Lond. under the Act already referred to [14 Geo. III. c. 78, 1774] are not only entirely useless, but in many instances produce injurious results, as the system under that Act frequently confers a reward for the first useless parochial engine, whereas the efficient engine, which may be on the spot a few minutes later, derives no pecuniary advantage. . . . .
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> 22. Your Committee have been unable to ascertain with any accuracy what is the total amount paid in the whole by the metropolitan parishes for the maintenance, however inefficient, of their present engines, under the Fire Act, but it must be considerable. It is estimated by Mr. Newmarch from £5000 to £10,000 p.a., but nearer £10,000.
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> 23. If however the intentions of the Act of Geo. III. were enforced, and every parish were bound to maintain an efficient estab., on the same scale as at Hackney, it is prob. that the whole expense would be in the same proportion, say at the rate of ½*d.* in the £ in the rating, or at a gross charge on a rating of £12,000,000 of no less than £25,000 a year; and then the objection would still exist to the system being purely parochial, and incapable of being brigaded. . . .
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> 27. Your Committee thought it desirable to ascertain what arrangements were made for protection against fire in some of the principal towns in the U.K. besides Lond., and they selected Liverpool, Manchester, and Glasgow, not only on account of their magnitude, but also on account of the fire arrangements being considered very efficient in all the three towns. . . .
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> 31. In all these three towns the supply of water at high pressure is almost unlimited, and the power of extinguishing fires by the application of hose pipes to the water mains [HYDRANTS] gives extraordinary facilities, and in a most economical manner, for effecting this service, almost dispensing with the use of fire engines. 32. It must, however, be borne in mind, that these 3 corp. have incurred very large expenses in bringing this water supply into the town; and as this expense has been defrayed by rates, the small apparent cost of extinguishing fires is greatly to be attributed to this circumstance.
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> 33. As the system of obtaining contributions in aid of the expense of the Fire Brigade, from the owners of the property where fires have occurred, as now in force at Manchester, has been thought worthy of special commendation by the owners of the Lond. Fire Brigade, and recommended for adoption in Lond., your Committee have turned their attention to this point. [FIRE BRIGADES, EXPENSES OF.]
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> 34. The supply of water is a matter of great importance in connexion with this inquiry. [FIRE EXTINGUISHMENT.]
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> 35. Some better regulation appears to be desirable to secure the immediate attendance of the fire-cock man, by a special arrangement under some responsible policeman or other person charged with giving the earliest notice of fires to the turncock.
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> 38. A question has been raised as to the fairness of charging a general rate, on the usual principle, for a fire-rate, on account of the exemption thereby afforded to property, not only insurable, but subject to great risk from fire, which will on such principle almost escape the payment of rate. This refers to goods, etc., in large Lond. warehouses not now assessed for rating. This could only be effectually remedied by a new and special mode of assessment, so as to make all insurable property contribute to this fire-rate. The amount of the charge for such protection would not prob. be sufficient to produce dissatisfaction on this ground. If, however, the question were considered sufficiently important, it must be separately dealt with hereafter by Parl.
>
> 39. Your Committee having now reviewed the principal topics which have been brought under their

> notice by the evidence taken in connexion with this inquiry, *have agreed to the following recommendations:*
>
> 1. That a Fire Brigade be formed under the superintendence of the Commissioners of Police, on a scheme to be approved by the Sec. of State for the Home Department, to form part of the general estab. of the Metropolitan Police, *and that the Acts requiring parishes to maintain engines be repealed.*
> 2. That an account of the expenditure of the new Police Fire Brigade be ann. laid before Parl., together with the general police accounts: in such manner that the special cost of the Brigade may be ascertained.
> 3. That the area of the new Fire Brigade arrangements be confined within the limits of the jurisdiction of the Metropolitan Board of Works, with the option to other parishes to be included, if within the area of the Metropolitan Police.
>
> 40. In conclusion, your Committee would beg to state, that in their opinion *no security can be given by legislation on this important question which would supersede the necessity for individual care by the occupiers of houses against the risk of fire; no precaution can prevent the occurrence of fires, nor can any public measures be enacted which could or should prevent individuals from suffering losses from those acts of carelessness from which fires generally arise: public measures can only be of real service in arresting the progress of fires when they occur, and in preventing the enormous losses which arise from allowing a fire to attain to any considerable dimensions.*
>
> 41. Nor can any legislative enactments be made which would prob. prevent the necessity of fire brigades being still maintained at the cost of the owners of large properties, such as the Docks. [DOCKS.] It may even be reasonably questioned whether the owners of large properties, where goods are peculiarly exposed to risk of fire, ought not to make some special protection for their own property; for if a system of rating were observed on the same plan as at present exists for country police rates, the property in warehouses would hardly be charged a sufficient rate to entitle them to demand more protection than is afforded generally to other property throughout Lond.; if a larger degree of expense was incurred by the new Fire Brigade especially for their protection, it would be only fair towards other ratepayers that they paid a larger portion of rates so increased for their especial protection.

It may be stated that the real object of the promoters of this inquiry was to shift the burden of the protection of the metropolis from fire from the shoulders of the fire offices on to those of the Metropolitan Board of Works; and although in this they were not immediately successful, the object was shortly afterwards (1865) attained. In this connexion it seems desirable to pass under review a letter addressed to Sir Geo. Grey, the Home Sec., by the Hon. Sec. of the London Fire Engine Estab., under date 21 Feb. 1862, which was after the appointment of the Select Committee had been agreed to, but before its sittings had commenced. The communication is a lengthy one, but one or two passages will suffice for our present purpose:

> Your Committee [of the London Fire Engine Estab.] are desirous to press upon your attention the fact that the present asso. of the Fire Ins. Offices, formed in 1832 and 1833 for the maintenance of a Lond. Fire Brigade, under the title of, etc., has no legal status whatever—neither charter, Act of Parl., nor deed of partnership. Without any public authority whatever, it has for now nearly 30 years extinguished the fires which have occurred in the metropolis and surrounding districts without inquiry and without charge. Without receiving pecuniary support of any kind from parochial or public funds, it has year by year sustained a rapidly increasing expenditure, the effect of which has been to relieve parishes and public bodies from the obligations properly devolving on them as regards the extinction of fires.
>
> In order to show the progress of the liabilities assumed, and expenditure incurred, by the Estab. since its formation in 1833, I submit a statement of the number of fires attended by the Brigade, and the expense incurred in maintaining the Estab. during the years 1833 and 1861 respectively:
>
> In 1833 the fires were 458 in number; the expenses incurred, £7988.
> " 1861 " 1138 " " £24,494.
>
> In the opinion of the Committee such an increase in the number of fires, and in the expenditure incurred, rendered a reconsideration of the whole subject imperatively necessary, more particularly as they were satisfied that a system for the extinction of fires which might formerly have been adequate for the metropolis has now become very insufficient for its present greatly extended limits.
>
> *They also observe that there is not any other capital or extensive city of Europe or America where the fire extinction service is not in the hands of the public authorities, and maintained principally by public rates and taxes; and that this obs. also applies to most of the large provincial towns of the U.K., viz. Liverpool, Manchester, Glasgow, etc.*
>
> The Committee are desirous, while commenting on this part of the subject, to draw your attention to the system of Fire Extinction Service in operation in Manchester, under the provisions of the Manchester Police Regulation Act, 7 & 8 Vict. c. 40, passed in 1844, sec. 115 to 122 of which relate more particularly to this subject. The principle of that Act, shortly stated, is, that the public authorities (*i.e.* corp.) maintain out of the police-rate what may be called the staff or plant of the Fire Brigade Service, but assess rateably upon all parties concerned as proprietors of property damaged by fire the expenses specially incurred in putting out each particular fire. *Where the property is insured, these expenses are borne ratably by the offices concerned according to their several interests; where uninsured, they are borne by the proprietors.* This system has now been in operation in Manchester since the passing of the Act in 1844, and the Committee fully believe with satisfaction to all parties interested. . . .

The Manchester Local Act, here referred to, will be found set out in some detail under FIRE BRIGADES, 1844. The letter proceeded to state that it was believed that the ineffective engines of the various metropolitan parishes were maintained at an ann. cost of not less than £5000.

Same year (1862) there was enacted 25 & 26 Vict. c. 66—*An Act for the safe keeping of Petroleum.* [PETROLEUM.]

Same Session too was passed the 25 & 26 Vict. c. 98—"The Gunpowder Act Amendment Act, 1862." [GUNPOWDER.] The Gunpowder Act, 1860, is hereby extended to include loaded percussion caps, ammunition, fireworks, fulminating mercury, or any other preparation or composition of an explosive nature.

In 1862 the *Brit. Fire Prevention and Ins. Co.* was projected. Its main feature was the introduction into general use of *Phillips' Patent Fire Annihilator*, by means of an arrangement made with the manufacturer. In our hist. of the Co. we have already given an outline of its scheme.

The Ins. Commissioners for the State of Massachusetts, in their Rep. pub. this year, say:

> The existence of Fire Ins. Cos. also makes it more important that there should be stringent State or municipal laws and regulations for the prevention of fires and the detection and punishment of incendiaries. Among us, as the costly experience of last summer proves, there is need of laws more effectually to control the manufacture, sale, and use of fireworks; not excluding that omnipresent little pyrotechnic, the friction match—a thing which sometimes seems to fulfil its destiny even without friction. In *France*, which understands chemistry, the amorphous or uncertain kind of phosphorus is not permitted to be used in the manufacture of lucifers. If patriotism does not consist in burning up our country, it seems to us that the whole trade in Chinese fireworks should be prohibited, and amusements should be provided for our children which will not tend so strongly to take the roof from over their heads, to say nothing of a better effect on the brains within. [FIREWORKS.]

1865.—This year marks an important epoch in the hist. of F. Protection, for there was enacted the 28 & 29 Vict. c. 90—*An Act for the estab. of a Fire Brigade within the Metropolis*, which has this simple preamble, "Whereas it is expedient to make further further provision for the protection of life and property from fire within the metropolis." This meant in the first place a transfer of the London Fire Engine Estab. to the Metropolitan Board of Works; and in the next place its extension to the growing wants of the metropolis. The Act contains 35 clauses, of which we shall give such parts only as seem necessary to make its objects clear.

Sec. 1. This Act may be cited for all purposes as the "Metropolitan Fire Brigade Act, 1865." 2. For the purposes of this Act the "Metropolis" shall mean the City of Lond. and all other parishes and places for the time being within the jurisdiction of the Metropolitan Board of Works. "Ins. Co." shall include any persons, corp. or unincorp., or any person carrying on the bus. of Fire Ins. 3. Gives definition of "Metropolis Local Management Acts."

4. On the 1st Jan. 1866, the duty of extinguishing fires and protecting life and property in case of fire should within the metropolis be deemed for the purposes of this Act to be entrusted to the Metropolitan Board of Works; which body, in view of the performance of the duties thereby implied, were to carry out the arrangements which we have already set forth in detail under FIRE BRIGADES; and under FIRE, PROTECTION OF LIFE FROM.

10. Gives power to the vestry of any parish or place in the metropolis to allow such compensation as they think just to any engine-keeper, or other person employed in the service of fire engines, who had heretofore been paid out of the rates, and was now deprived of his employment.

The following important clause we give *in extenso*:

12. On the occasion of a fire, the chief or other officer in charge of the Fire Brigade may in his discretion take the command of any volunteer fire brigade, or other persons who voluntarily place their services at his disposal, and may remove or order any fireman to remove any persons who interfere by their presence with the operations of the Fire Brigade, *and generally he may take any measures that appear expedient for the protection of life and property, with power by himself or his men to break into or through, or take possession of, or pull down any premises, for the purpose of putting an end to a fire, doing as little damage as possible*; he may also on such occasion cause the water to be shut off from the mains and pipes of any district, in order to give a greater supply and pressure of water in the district in which the fire has occurred; and no water co. shall be liable to any penalty or claim by reason of any interruption of the supply of water occasioned only by compliance with the provisions of this sec.

All police constables shall be authorized to aid the Fire Brigade in the execution of their duties. They may also close any street in or near which a fire is burning, and they may of their own motion, or on the request of the chief or other officer of the Fire Brigade, remove any persons who interfere by their presence with the occupation of the Fire Brigade.

Any damage occasioned by the Fire Brigade in the due execution of their duties shall be deemed to be damage by fire within the meaning of any pol. of ins. against fire.

The last para. has an important bearing upon the practice of Fire Ins., inasmuch as it fixes the loss of buildings destroyed to stay fire upon the office in which it happens to be insured.

13. Every ins. co. that insures from fire any property in the metropolis is to pay ann. to the Metropolitan Board of Works, by way of contribution towards the expenses of carrying this Act into effect, a sum after the rate of £35 in the £1,000,000 on the gross amounts insured by it, except by way of re-assurance in respect of property in the metropolis, for a year, and at a like rate for any fractional part of a million, and for any fractional part of a year, as well as for any number of years for which ins. may be made, renewed, or continued. The said payments by ins. cos. to be made quarterly in advance on 1st Jan., April, July and Oct. respectively.

14. All contributions due from an ins. co. to the Board in pursuance of this Act to be deemed specialty debts due from the co. to the Board, and to be recovered accordingly.

15. Defines the mode of ascertaining proportions of contributions by ins. offices, viz. return to be made on 1st June of the gross amount of ins. in force, to be verified by sec.

or principal officer of co. The return so made to come into effect for succeeding year dating from 1st Jan. 16. Penalty of £5 p. day on ins. cos. not making return. 17. Books and papers of ins. co. may be examined by officers of the Board.

18. The Commissioners of Her Majesty's Treasury to pay such sum as Parl. may from time to time grant for the purpose, not exceeding £10,000 in any one year.

19. All sums expended beyond those enumerated to be contributed by overseers of the poor under precepts issued to the overseers of the metropolitan parishes for that purpose. 20. Penalty for non-payment by overseers.

21. Power to Board to borrow any sum not exceeding £40,000 for the purposes of this Act, and for this purpose the powers of the Metropolis Local Management Acts to apply.

The more miscellaneous powers of the Act are contained in the succeeding clauses.

23. Penalty for chimneys on fire. [CHIMNEYS.]

29. Power to estab. a Salvage Force by the fire offices. See FIRES, SALVAGE AT.

30. Power to Board to allow the Brigade to go beyond limits of metropolis "when occasion requires," and provision as to payment of expenses. [FIRE EXTINGUISHMENT.]

31. The Board is to send every day except Sundays to the ins. offices contributing for the purposes of this Act, information "of all fires which have taken place within the metropolis since the preceding return," in such form as may be agreed upon.

32. All powers now exercised by any local body as to fireplugs to be trans. to the Board.

33. Definition of owner of property.

34. The unrepealed clauses of the 14 Geo. III. c. 78 (1774) repealed, except sec. 83 and 86; and (35) the 3 & 4 Wm. IV. c. 90 repealed in part.

Mr. Chas. F. T. Young, C.E., read a paper before the Society of Arts: *On the Best Organization for Protecting Lond. from the Ravages of Fire.* There was a great deal in the paper of interest; but its reiterated cry was in favour of volunteer fire brigades. He drew his examples in support mainly from the U.S.; but as the volunteer system has been admittedly a failure there, and has been superseded by paid men, we need not dwell upon the subject further. The paper is pub. in full in vol. xiii. of the *Journ. of the So. of Arts,* p. 165.

1866.—The Metropolitan Fire Brigade Act, 1865, already recited, came into operation on the 1st Jan. It had been estimated that the cost of the London Fire Estab. had been 2*d.* per £100 insured in the Metropolitan District annually. The present Act made a uniform charge on the sums insured in the Metropolitan District of £35 p. million, or a fraction less than 8½*d.* for each £1000 insured.

It was estimated that to put the Brigade, including fire escapes and other appliances, into thorough efficiency, so as to afford real protection to the Metropolitan District, the expenditure would sooner or later have to be increased to £100,000 p.a. The Metropolitan Board, we believe, determined the limit of its expenditure to be £50,000 at starting. Towards this, it was to receive, say £10,000 p.a. from the Gov. in consideration of its protection of the Gov. or national buildings; the contributions of the offices, it was estimated, would yield another £12,000 p.a., leaving £28,000 to be raised from the rates, which would be about ½*d.* in the £ on the ratable value of £13,000,000 included in the metropolitan area. But the metropolitan parishes were relieved of all charges for maintenance of fire engines, estimated at from £5000 to £10,000, and were soon to be relieved of contributions towards fire escapes.

Again, the ins. offices handed over to the Metropolitan Board, as a gift to start upon, its entire freehold and leasehold property, consisting of stations, also its stock of fire engines, manual, steam, and floating; and all the appliances incident to the Estab. The estimated value of these at time of transfer was, stations £12,571; plant £11,449 14*s.* 5*d.*; total £24,020 14*s.* 5*d.*; against which, however, must be set off value of annuities and pensions allowed to disabled members of Brigade, widows, etc., valued actuarially at £5822 6*s.* 9*d.*; leaving bal. £18,198 7*s.* 8*d.*

There was also enacted 29 & 30 Vict. c. 69—*An Act for the amendment of the Law with respect to the carriage and deposit of Dangerous Goods.* Some details concerning this measure we have already given under DANGEROUS GOODS. [NITRO-GLYCERINE.]

This year, there was pub by Mr. Charles F. T. Young, C.E.: *Fires, Fire Engines, and Fire Brigades: with a Hist. of Manual and Steam Fire Engines, their Construction, Use and Management; Remarks on Fireproof Buildings, and the Preservation of Life from Fire; Statistics of Fire Appliances in English Towns; Foreign Fire Systems; Hints for the Formation of and Rules for Fire Brigades; and an Account of American Steam Fire Engines.* The author, after referring to the subject of fireproof buildings, and the difficulty of securing these, proceeds:

> A more desirable and important point to be properly carried out, and one deserving of no small amount of serious consideration, is the providing of separate and proper storehouses for the dangerous and inflammable materials now daily introduced in large quantities by the requirements of manufactures or trade. It is a question which should be speedily ventilated, and some reliable means adopted by which the necessity of storing, in the thickly inhabited parts of the metropolis, of saltpetre, sulphur, petroleum, jute, and other equally dangerous substances, should be done away with; and thus remove the fearful risk we hourly run of the repetition of another Tooley St. conflagration, and that too of a far more serious and destructive character.
>
> Hogsheads upon hogsheads of the Petroleum, now become such an extensive article of trade, may be found stored in some of the most thickly populated parts of the metropolis, in positions where the

> ignition of but a small portion must involve the burning of a whole neighbourhood, and the destruction or endangering of human life to an extent frightful to contemplate. The great petroleum fire is a sample of what may be expected here from this cause, if things remain as they are. There can be no reason why such materials possessing an inflammable character should not be required to be kept to themselves, in positions and in buildings solely laid out for the purpose, so that in case of their igniting, the mischief may be confined to the building and locality where the fire originated.
>
> Oils, spirits, and liquid materials of an inflammable nature would be best stored in tanks below the surface of the ground, by which means they would be prevented from running about the neighbourhood in a stream of fire, as has so often happened in the great conflagrations in the metropolis during the past few years. A light building erected over these tanks would be all that is needed, and in case of catching fire they would be down in a few moments, there being no body of material to hold the fire, and conduce thereby to lighting the whole neighbourhood. Some position should be chosen where there are no buildings in close proximity, and it should be forbidden by law to erect any within a certain distance; so that if it be impossible to prevent them taking fire, it should be at least possible to prevent the mischief extending to other buildings.

Happily many of the plans here suggested, or similar ones, have been carried into effect; yet much more remains to be done. He passes on to consider the construction of buildings, whereon he offers the following practical suggestions:

> The interior arrangement of a building has a great and important influence on the results of a fire, both as regards the contents of the building, and the building itself. Where a building is so arranged that no means are afforded for restraining the progress or extension of the fire from one portion of the materials, or the building, to another, the effects are most serious. In dwelling-houses the placing and arranging the opening of the staircase has a great influence on the extent of the fire; and its usual action is that of a chimney shaft on a close fire, viz. to increase its strength by the rapid current of air which it causes when it unfortunately catches alight. . . .
>
> In constructing warehouses, the floors might be divided by strong partition walls into numerous rooms, closed by double iron doors; and the floors constructed in such a manner that the flooding of any one room should not damage the contents of another; then an outlet might be arranged, so that a certain height of water would cause it to act of itself, and permit its escape: thus preventing its accumulation to an inconvenient extent. Each floor should have water laid on, and cocks and short lengths of hose attached to each, at convenient parts of each room. . . . The doors between each room or division might be so arranged as to show in the head office, or that of the watchman, whether they were closed or open; and thus a ready check would be provided against workmen leaving them open at the close of their work. . . .

1867.—Another Select Parl. Committee was appointed "to inquire into the existing Legislative Provisions for the Protection of Life and Property against Fires in the United Kingdom, and as to the best means to be adopted for ascertaining the causes and preventing the frequency of Fires." Among the members composing this Committee were Mr. Peter McLagan, M.P., Chairman of the London Board of the *Queen* Ins. Co. (who had moved for the appointment of the Committee, and was in consequence its Chairman); Mr. Turner, Chairman of the *Royal;* Mr. Tite, Mr. Laird, Mr. M. H. Beach, Mr. H. B. Sheridan. Among the witnesses called were Mr. C. F. T. Young, Mr. G. A. Young, Surveyor to *Imperial* Fire; Mr. F. G. Smith, Lond. Man. of *Scottish Union;* Mr. C. J. Bunyon, Lond. Agent of *Norwich Union;* Mr. S. J. Fletcher, Sec. of *Sun* Fire; Mr. David Smith, Man. of *North Brit. Mercantile;* Mr. P. M. Dove, Man. of *Royal;* Mr. Swinton Boult, Man. of *Liverpool and London;* Capt. Shaw, of the Metropolitan Fire Brigade; Prof. Lyon Playfair, Sir Thomas Henry, Police Magistrate; Mr. John Humphreys, one of the Coroners for Middlesex; Mr. Serjeant Wm. Payne, another Middlesex Coroner; Mr. Wm. Swanton, Supt. of Lond. Salvage Corps; Mr. Fredk. Wm. Huhn, Representative of several British Ins. Cos. trading in Russia; and many Fire Office Surveyors and Adjusters, men of large and varied experience.

The Committee adopted three modes of obtaining information in view of arriving at a conclusion on the subjects of their inquiry—1. By examining witnesses from different parts of the U.K. and elsewhere. 2. By means of the evidence taken by the Select Committee in 1862. 3. By obtaining answers to certain questions.

The Rep. of the Committee states that the inquiry resolved itself into two heads.

1st. *The existing legislative provisions for the protection of life and property from fire;* and

2nd. *The best means of ascertaining the causes and preventing the frequency of fires.*

Regarding the *first* head they found the legislative enactments applying to the whole kingdom to be as follows:

1. The "Towns Improvement Clauses Act, 1847" (10 & 11 Vict. c. 34), which contains provisions regulating the erection of buildings with the view of preventing fires, by means of party-walls carried through and above the roofs, and the constructing of all walls and roofs of incombustible materials; and also for supplying and maintaining of fireplugs.
2. The "Water Works Clauses Act, 1847" (10 Vict. c. 18), which contemplates the provision of a constant supply of water for domestic purposes, and for the purpose of extinguishing fires, at such a pressure as to make the water reach the top story of the highest house within the town; and for the fixing of fireplugs in the mains.
3. The "Local Government Act, 1858," superseding the Lighting and Watching Act of 1833, and incorporating some of the provisions of the Towns Improvement Clauses Act, 1847.
4. The "General Police and Improvements (Scotland) Act, 1862" (25 & 26 Vict. c. 101), which contains provisions regulating the erection of buildings with the view of preventing the spreading of fires, and for the purchasing and keeping up of fire engines, hose, buckets, etc.
5. The Gunpowder Act of 1860—23 & 24 Vict. c. 139.
6. The Act for the safe keeping of Petroleum, 1862—25 & 26 Vict. c. 66.
7. An Act for the amendment of the Law with respect to the carriage and deposit of Dangerous Goods—29 & 30 Vict. c. 69.

In addition to these they found that there were certain local Acts passed mainly with the view of making provisions for the preventing and extinguishing of fires, of which we may mention the Metropolitan Building Act, the Liverpool Local Acts, and several Police Acts, such as those of Manchester, Glasgow, etc.

Regarding the *second* head of the inquiry, viz. *the best means of ascertaining the causes and preventing the frequency of fires*, the Committee say in effect as follows:

> Most of the witnesses concur in the belief that there has been a great increase in the number of fires of late years; that there has been a large proportional increase in the fires whose causes were unknown as compared with the gross number of fires; and that this increase and the general increase of fires was due very much to incendiarism.
>
> Evidence was given that the rate of increase in the number of fires in the metropolis since 1845 was much greater than the rate of increase in the number of houses or pop. It was also stated that out of 589 fires occurring in the metropolis during the year 1866 whose causes could not be satisfactorily accounted for, 480, or about five-sixths of the 589 fires happened on insured property.
>
> It was given in evidence, and admitted by gentlemen connected with ins. cos., that the increase in the number of fires of late years was in some measure to be attributed to the great competition among ins. cos. for bus.; to their carelessness in taking risks, as well as in the appointment of agents; to the too ready facility with which they settle claims, some of which they believe to be fraudulent; and to a disinclination in general in the cos. to prosecute.
>
> It was found to be the practice on the Continent of Europe, and in America, and Australia, to inquire into the origin of all fires, and the effect of such investigations had been to reduce the number of fires. [FIRE INQUESTS.]

As to the *third* head, with the view of obtaining some information regarding the provisions made, and the means taken for the protection of life and property from fire in the U.K. generally, the Committee issued the following questions to about 120 of the principal towns. No town in England with a pop. of less than 20,000 inhabitants (with one or two exceptions) received a copy of the questions, but the same rule as to pop. was not observed in Scotland and Ireland.

Questions.—1st. Are there any means adopted in your town for the protection of life from fire in the construction of buildings or in the possession of fire escapes? 2nd. Is the water supplied by a private company, or by the local authority? 3rd. What are the regulations regarding the supplying of water in the case of a fire? 4th. What are the number and kinds of fire engines and other appliances for the extinguishing of fires? 5th. Is there a fire brigade? if so, how is it supported? 6th. Is there any local Act, or are there any municipal regulations applicable to the erection of buildings and the storage and classification of goods with the view of preventing the spreading of fires? 7th. In the event of a suspicious fire occurring, what measures are taken for investigating into the circumstances?

Answers were received from 86 towns, as follow:

> 1st. No means are adopted in any of the towns for the protection of life from fire in the construction of buildings, with the exception of one or two instances, where ladders are built in the outside of the walls of some manufactories: 51 towns have fire escapes, and 35 have none.
>
> 2nd. The water is supplied by private cos. in 38 towns, and by the local authorities in 42; and there is no supply of water except by pumps and wells in six towns.
>
> 3rd. There are no particular regulations regarding the supplying of water, but the private companies and local authorities are understood to be bound to give a full supply of water free of charge, and fireplugs are placed in all the mains.
>
> In the large towns turncocks are appointed, to whom notice is sent when a fire occurs, and the firemen and police, when acting as firemen, are supplied with keys to the fireplugs.
>
> 4th. 78 of the towns are furnished with *fire engines*, very few of them being steam engines, and eight have no fire engines, but some of them are supplied with water at high pressure, and are furnished with hose, which are attached to the fireplugs when a fire occurs. In some towns the engines belong to the ins. cos.; in others they belong partly to the ins. cos., and partly to the local authorities.
>
> 5th. In 78 towns there are *fire brigades*, either supported by the local authorities, or by ins. cos., or they are volunteer brigades; in some towns they are both volunteer and paid.
>
> Some of the brigades are paid in part by the owner of the property at the burning of which they were called to on act. Where there are no brigades, the police are expected to act as firemen.
>
> 6th. In 60 towns there are no regulations as to the erection of buildings for the prevention of fire; one or two of the principal towns have local Acts, and the remainder have adopted the building clauses in one or other of the general Acts enumerated above.
>
> 7th. The answers returned to this question in England and Ireland are rather vague, as in many towns no suspicious fires occurred, and no opportunity was therefore afforded for resorting to any particular measures. But they indicate that if such occurred, the police would be expected to investigate, or the ins. cos. would be expected to institute an inquiry before settling the claim.
>
> In *Scotland* the investigation is always made by the Procurator Fiscal.

Upon the whole, the Committee regarded the preceding answers as satisfactory, with the exception of those to the 1st, 6th and 7th questions; but in arriving at this conclusion the Committee had taken into account the means afforded in many towns for extinguishing fires by ins. cos., by supplying and maintaining fire engines and fire brigades, and had assumed that the engines, hose and other appliances were kept in good repair and in an efficient state. But they considered it would be much more satisfactory, particularly in towns with a pop. of 20,000 inhabitants and upwards, were the whole of the means of extinguishing fires supplied by and placed under the control of the local authorities.

Returning to the metropolis, the Committee found that the appliances for Fire Protection had increased in a very marked manner. In a period of 18 months 24 new stations had been opened, making the total number 43; 46 new engines had been obtained, making the total number 84; and the number of men had been increased by 103, making a total of 232.

While the Committee was sitting, the Metropolitan Board of Works had taken over the fire escapes and other appliances of the Royal So. for the Protection of Life against Fire.

The Committee had taken evidence regarding the existing arrangements for water supply for extinguishing fires in the metropolis:

> But as a Commission is at present sitting to inquire into the whole subject of the supply of water in the metropolis, your Committee did not go so fully into the subject as they would otherwise have done; but they have to express a hope that the Commission will attach due importance to that part of the subject of their inquiry bearing upon the extinguishing of fires, and that they will insist upon facilities being given for obtaining readily a full supply of water at a high pressure, on the occurrence of a fire. [WATER SUPPLY.]
>
> The Committee therefore recommend (*inter alia*) that to prevent fires from faulty construction there should be a general Building Act for all towns and places in the United Kingdom similar in its general provisions, and in the powers it confers on local authorities, to the Metropolitan Building Act, and the Building Acts of Liverpool. In buildings occupied with shops below and dwellings above, the floor immediately above the shop should be made fireproof.
>
> That it should be made a standing order of the House that every unopposed Water Bill providing for or regulating the supply of water, and which provides that such supply need not be constant or at high pressure, shall, immediately after the second reading thereof, be referred to the referees to inquire and report whether sufficient reasons exist for such provisions.
>
> That where in an investigation into the origin of a fire it has been proved to have been caused by the culpable carelessness of some person or persons, such person or persons shall be deemed guilty of a punishable offence. [FIRE INQUESTS.] Recommendations are made as regards mineral oils [MINERAL OILS.] Also as to storage of goods in warehouses. [FIRE INS., CLASSIFICATION OF GOODS IN STORE.]
>
> While the above recommendations (the Committee say) may be productive of good, some means must be devised for discovering the causes of unknown or suspicious fires, and for preventing the frequency of wilful or intentional fires. The evidence shows that wilful fire-raising may be traced to several causes. 1st. To individuals and organized gangs of men who make a trade of it to defraud insurance cos. 2nd. To parties who have been unfortunate in business, and who cannot meet the claims made on them. 3rd. To persons in warehouses to conceal theft of goods made by them on the warehouses. 4th. To malice.
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> In recommending an inquiry into every fire, that inquiry should be divided into three stages. 1st. The initiatory stage to be made by the police or fire brigade, who are to report anything suspicious to the officer authorized to make inquiry. 2nd. This officer shall examine witnesses, and if suspicion cannot be fixed, to drop the inquiry. 3rd. If it can be fixed, to proceed with a prosecution before the Criminal Courts. [FIRE INQUESTS.]
>
> And finally they specially recommend that no claim should be settled by any ins. co. without a certificate from the police, or fire brigade, or officer appointed to conduct the investigation.

The preceding recommendations are condensed considerably from the orig.; but they are referred to in some detail under the special heads to which they relate. We shall see that the main recommendations of the Committee, beneficial as they obviously are, have not yet received anything like detailed consideration from the House.

The Poor Law Amendment Act, 1867—30 & 31 Vict. c. 106—enacts as follows:

> 29. If the vestry of any parish, where there is no town council, local board, or other authority competent to provide the same, after due notice, shall resolve that the overseers shall provide any fire engine, ladder, or fire escape for general use in the parish, the overseers shall provide the same, and pay out of the poor-rate the cost thereof, and of procuring a proper place wherein to keep the same, and of maintaining it, as well as any such engine, ladder, or escape acquired by the parish in any other manner for such use, in a fit state of repair, and the charges of such persons as may be necessary for the use thereof, and the cost of suitable implements and accoutrements.

1868.—In the House of Commons, on the 16th March, Mr. McLagan asked the Secretary of State for the Home Department whether it was his intention to bring in a Bill this Session to carry into effect the recommendations of the Select Committee on Fire Protection of last Session. Mr. Hardy replied that he could not promise to bring in a Bill to carry into effect all the recommendations of the Select Committee of last Session on that subject; but he hoped to do so as to inquiries into suspicious fires. Nothing done, except the following:

There was enacted 31 & 32 Vict. c. 56—*An Act to amend the Act* 25 & 26 Vict. c. 66, *for the safe keeping of Petroleum.* This measure contains a definition of what shall be deemed petroleum, which is important. [EXPLOSIVE SUBSTANCES, sub-heading OILS.] [PETROLEUM.]

Most of the towns in the U.S. have Ordin. which embody provisions for Fire Protection more or less complete. The cities and larger towns, indeed, usually have special *Fire Ordin.* The Ordin. of the smaller towns often contain provisions of a very practical nature. Here is an illustration taken from an Ordin. of *Skaneateles*, a small town in the State of N.Y., promulgated this year, but totally neglected ever since.

> Sec. 44. The trustees shall, in addition to themselves, annually appoint one or more inspectors to examine carefully at all times during the year, under the directions of the trustees, every house, store, or building, *and places for the keeping and deposit of ashes*, and to ascertain and note any violations of any of the preceding sections, and report the same to the trustees; and also to remove or abate with the consent of the trustees (and in neglect or refusal of the owner or occupant) any cause from which immediate danger of fire may be apprehended; and to cause all buildings, chimneys, stove-pipes, hearths, ovens, boilers, ash-houses and apparatus used in every building or manufactory, which shall be found in such condition as to be considered unsafe, to be without delay put in such condition as not to be dangerous in causing or promoting fires.

The following sec. imposes a fine of 25 dols. for obstructing the inspectors while in the performance of their duties.

1869.—There was passed the 32 & 33 Vict. c. 82—*An Act to amend the Metropolitan Building Act*, 1855—by which the power over dangerous structures is trans. to Metropolitan Board of Works.

There was also enacted 32 & 33 Vict. c. 113—*An Act to prohibit for a limited period the importation, and to restrict and regulate the carriage of Nitro-Glycerine.* An outline of its provisions is given under EXPLOSIVE SUBSTANCES.

1870.—In our art. FIRE INS., MUNICIPAL AND STATE, under this date, we give an outline of the scheme of State Ins. as practised in the Canton Zurich, in Switzerland; and it is seen that the system of State Fire Ins. as there practised results in very stringent measures in regard to Fire Protection.

1871.—There was enacted "The Metropolis Water Act"—34 & 35 Vict. c. 113—*An Act to amend "The Metropolis Water Act, 1852," and to make further provision for the due supply of Water to the Metropolis and certain places in the neighbourhood thereof.* Some of the clauses of this Act have a most important bearing upon the subject before us, as also upon the health of the metropolis, more particularly those which relate to a "constant supply," as against the former system of intermittent service. By sec. 7 each of the Metropolitan Water Cos. *might*, and from and after the expiration of 8 months from the passing of this Act "shall, when required to do so, in the manner directed by this Act, provide and keep throughout their water limits, or throughout such parts of such limit as they may be required in manner aforesaid, a constant supply of pure and wholesome water, sufficient for the domestic purposes of the inhabitants, constantly laid on at such pressure as will make such water reach the top story of the highest houses within such water limits." The details of the measure will be given under WATER SUPPLY.

On the 7th Oct. occurred the great fire which destroyed the City of Chicago, U.S. It destroyed 12,000 buildings covering nearly 5 square miles; the value of these and their contents being estimated at £33,000,000 sterling. [CHICAGO.]

This incident led to a good deal of discussion and investigation regarding the condition of Lond. The *Times* arrived at the conclusion that there was no great city in Europe exposed to such risks as Lond., and made out the following strong case in support of its position:

> The danger has been increasing since the time the City was rebuilt after the Great Fire of 1666; but within the last five-and-twenty years the liability has become rapidly and proportionately very much greater, and there is but too much reason to think that it is not yet at a standing-point. There are fire risks which Lond. no more than shares in common with all other commercial cities; and at the first blush it may occur to the reader that the growing danger of which we speak is owing to the increasing area of the metropolis, and that the risks of Lond. are greater than those of other cities only in proportion as it is so much larger. Now, it may appear paradoxical to say that just the contrary is the fact. The real cause of our additional liability to destruction by fire is to be found in the circumstance that while the commerce of Lond. has advanced so enormously, the area in which that commerce is carried on has hardly extended at all, or, at all events, has not extended in anything like keeping with the bus. done within it. Our commerce is so inveterately given to localize itself, despite all surrounding extension, that the commercial Lond. of 1871 has pretty much the same topographical boundaries as the commercial Lond. of 1666. The Lond. that stands the greatest chance of being burnt down in the present day occupies the site of the Lond. which was consumed by the fire in the reign of Charles II. In estimating the chances of a general conflagration, ins. offices and firemen take but little account of private houses, and though more, not very much more of retail shops. The heavy risks are wholesale warehouses and manufactories. It is by the circumstances under which the commerce of Lond. is carried on that its risks are to be calculated. In respect of precautions against fire, it would be difficult to imagine anything more unfavourable than the manner in which Lond. has accommodated itself to the stupendous growth of its prosperity. From St. Paul's to the Monument—the area ravaged by the flames of 1666—it would not be easy to find a yard of ground without its "fire traps," even though you pursued the search to the water's edge for the whole distance. . . . .
>
> Some years ago it was estimated that the movable property of Lond. might on any given day be estimated at 900 millions. It is believed that at the present day an estimate of 1000 millions would not be above the mark. There is more than one private firm whose stock when full is value for a million at cost price, and there is a wharf between Southwark and Lond. Bridges which rarely has at any hour less than that money's worth of consigned goods stored in its lofts. Half a million's worth is quite an ordinary stock for many of the water-side stores, and yet, throughout the portion of the City to which we have been referring, the wharves and warehouses are stuck so closely together that a whole range of ten or a dozen of them can only be regarded as one, instead of what they ought to be, as so many separate risks. Throughout the whole commercial area there are a very bad class of "fire traps," in the shape of houses composed either entirely of wood or of wood with some very thin brick walls between the framework. This adds immensely to the danger of Lond. from fire. Another danger to Lond. is the narrowness of many of the streets in the commercial quarter. Builders' yards choke full of timber are plentifully dispersed among the City warehouses. More perfect "fire traps" in such situations could not be devised.
>
> It is worthy of remark that some of the trades which are popularly supposed to be the safest are among the most dangerous. Thus, when people hear of a fire in an iron foundry, they are apt to conclude that it cannot do much harm. But an iron foundry is a heavy risk. For ten men engaged at the casting, there are, perhaps, as many as 20 employed at making the wooden models, and both these and a stock of timber, all as dry as matches, are kept in the same premises as the furnaces. Then a fire on glass stores is supposed to be a mere nothing; but firemen regard it with great apprehension, because in bulk of stock the crates and straw are usually about double that of the glass. On examining the shipping and the wharves and the other water-side premises from Lond. Bridge down to the Surrey wood docks on the south side, and the Regent's Canal dock on the north, it is impossible not to be struck with the danger which lies lurking throughout the whole way. The trade of the port of London has grown out of all proportion to the safe accommodation for it. The buildings in the narrow streets and lanes on either side are literally upon the stores and wharves, and whole acres covered by the premises of different owners are for fire and its prevention nothing more than a single risk. Between the most valuable blocks of warehouses are old wooden houses to the number of hundreds, and worse still, many wooden coal hoists, than which nothing is more dangerous. In a word, the danger of a general conflagration in Lond. appears to be greater than in any other city, because in none other is there anything like the same amount of commerce of all kinds carried on within the same superficial area, and under conditions so unfavourable to due precaution. Happily, the Metropolitan Board of Works seems disposed to maintain an efficient Fire Brigade. The difficulty of concentrating the efforts of the entire staff of that force at a given spot in time to stop the spread of a fire which has once seized hold of a street of the City warehouses is

> one which has not been lost sight of. The Board and Captain Shaw have been devoting much attention to the floating engines and also to the thorough training of the men. Probably no such climbers can be found in any other city as the firemen of London. For some years past no man has been taken into the force who had not previously been a sailor, and it has been found that, with a shorter drill than any other class, sailors become the best firemen. The powerful and continuous stream of water poured upon a fire from one of the floating engines makes them extremely powerful auxiliaries in extinguishing a vast fire. We have four, and even the U.S. can boast of nothing like them. Recent experiments lead to the belief that they may be employed with advantage at even a very considerable distance from the river. The number of steam land engines has been steadily increasing, and at every station there are manuals, which are particularly useful where the distance to the fire is short. Lastly, telegraphic communication is perfect between all the stations, so that no fire can make any head without being encountered by at least a well-organized resistance.

This may be regarded as almost a photograph of Commercial Lond. at the date it was written. Improvements are being effected very gradually.

Rogers, in his *Principles and Practice of Fire Underwriting* (2nd ed. N.Y.), pub. this year, deduces the following point of practice in relation to Fire Protection :—"In towns and cities where there is a well-organized paid fire department, *buildings* are materially better risks than *stocks*, as a rule. Where there is no fire department, or one imperfectly organized, *stocks are preferable to buildings*."

1872.—There was enacted 34 & 35 Vict. c. 105—*An Act for the safe keeping of Petroleum and other substances of a like nature.* This is a Consolidating Act, with some new provisions. [EXPLOSIVE SUBSTANCES, sub-heading OILS.] [PETROLEUM.]

On the 9th Nov. this year occurred the Great Fire at Boston, U.S., by which about 700 houses were destroyed, and the aggregate loss reached nearly £20,000,000. A good deal of attention had been given to the subject of Fire Prevention and Protection in London. This great fire occurring so comparatively early after the Chicago fire intensified this interest. The Court of Common Council passed the following resolution :

> That it be referred to the Gas Committee to consider if any improvement can be suggested in the water supply of the City of Lond. in case of fire : either by fixing hydrants in certain of the public ways or by any other method ; with power to confer with the Directors of the New River Co. and the Commissioners of Sewers on the subject.

This Committee was also "To inquire as to the practicability of devising some plan whereby an abundant supply of water can be drawn from the Thames, to be used for the purpose of extinction, cleansing the streets, and flushing the drains of the City ; to ascertain the prob. cost of the necessary works, and rep. thereon." The reports were presented in 1874 and 1875. See these dates.

Captain Shaw, in his excellent little book, *Fire Surveys*, pub. this year, says :

> There cannot be the slightest doubt about the great good which can be effected by a thoroughly efficient fire brigade, but it is no less certain that, however perfect the supply and distribution of water, or the mechanical appliances and personal intrepidity and skill of a fire brigade may be, *still the safety of any great city, and more particularly of any mercantile city containing a great amount of amassed property*, must eventually depend to a much greater degree than has hitherto been acknowledged on the mode in which its buildings are constructed, and the property within them classified with special reference to risk of fire.

Regarding fire engines, he says they are "portable machines for pumping water *already provided*," and adds :

> It is no part of their function to provide water from great depths or long distances ; although unfortunately they have frequently to be used for this purpose. So little attention has been paid to this point that instances are found in which large and valuable warehouses, though almost completely surrounded by water, are absolutely unprovided with any means of making the water available for the use of fire engines until after a loss of time which must in many cases be fatal to success.

Mr. John M. M'Candlish, F.R.S.E., Man. of the *Scottish National* Ins. Co., read before the Actuarial So. of Edin. this year an Address on Fire Ins. We have quoted largely from it in our general hist. of Fire Ins. He shows with admirable logic how the losses arising from insufficient means of Fire Protection fall on the public sooner or later :

> It may seem superfluous to dwell on a point so unquestionable ; and yet the contrary view is a very common one, and leads to unfortunate consequences. If losses by fire are in reality borne by the insurance offices, then they have the greatest possible interest in keeping down the number and magnitude of fires, and ought to bear the expense of the requisite machinery. *But if all losses really fall upon the insured, in other words, upon the public, then the preventing and extinguishing of fires is directly a matter of public interest, and ought to be done at the public expense.* The force of this truth, however, has not always been perceived by the offices themselves, and is even now recognized by a very small portion of the community. . . .
>
> In recent Sessions of Parl. Bills have been introduced on the recommendation of a Select Committee of the House of Commons to estab. a judicial inquiry into the cause of every fire. These Bills have not been opposed by Gov., but very considerable difficulty is found in adjusting a satisfactory machinery for making such inquiries. . . . . The encouragement given to such a Bill is an acknowledgment of the principle that it is the public, and not merely the ins. offices, that have an interest to prevent fires ; *and yet so inveterate is the opposite view, that in all prob. no measure of this kind will be speedily agreed to, unless on the condition that the cost of the inquiries to be instituted into the origin of the fire shall be wholly or largely borne by the ins. offices.*
>
> These expenses, and those incurred in extinguishing fires, must in the end fall upon the public, in the same manner as all losses by fire necessarily do ; and the only question for consideration is whether the ins. offices ought to be charged with them in the first instance, and left to recover them from the public in the form of an add. to such rates of prem. as would otherwise be necessary. The offices might well complain of such an arrangement. The burden, if laid on them, ought to be borne in the several cities and towns throughout the country in some proportion to the bus. which each office derives from each locality ; but this on any general scale is practically impossible. The system, too, is open to the same objection which was held fatal to the fire ins. duties, now happily abolished—that it increases the cost, and to that extent discourages the practice of ins. : *and indeed it is con-*

> *ceivable that the more perfect the system worked in the direction of keeping down fires, the less inclined would many persons be to insure.* But these are objections mainly from the point of view of the fire cos. On behalf of the public, it may be pleaded that at the best it is a clumsy method of taxing the community—when more direct and more equitable methods are available. It throws the cost entirely on the prudent section of the public which insures, while it promotes the security, and encourages the negligence of the imprudent, who do not insure at all, or insure inadequately. *Fire engines managed by local authorities, but supported wholly or in any considerable degree by ins. offices, are sure to be kept in less efficient condition, and at greater cost, than when the public are the direct paymasters, and interested therefore in securing good value for money.* . . .
>
> There can be no question that the arrangement which is most sound in theory, and most for the public interest in practice, is that the owners of property, individually and collectively, should charge themselves with the duty and the cost of preventing and extinguishing fires. Losses by fire being thus reduced as much as possible in number and magnitude, may then be left, in the first instance to be met by ins. cos., and ultimately to be distributed by them amongst the persons insured, in the form of rates of prem., which will inevitably, in the long run, bear a fair proportion to the losses.

Some of these points have also been considered under FIRE INS. PREMS.

Captain Shaw, in his report to the Metropolitan Board for this year, embodied the following para.:

> In my rep. of last year I ventured to express a hope that the constant service provision of the new Water Act would have at least the effect of making every fireplug represent an immediate supply of water; but, although this Act was supposed to come into force on the 21st of April last, I regret to have to mention that I am unable to point out as much as one instance in which the work of the Fire Brigade has been affected by it, and that, in fact, as far as our business is concerned, the Act remains still, at the end of more than eight months, wholly inoperative.

It not unfrequently happens, especially in the U.S., that fire pol. contain stipulations in regard to measures of fire protection. Thus in the case of *Aurora* F. Ins. Co. v. *Edely*, before the U.S. Courts this year, there was a stipulation in the pol. that the assured should keep a certain number of "buckets filled with water" in the building ins., "ready for use at all times, in the case of fire." But it was *Held*, (1) if, from freezing or other unavoidable causes, a literal compliance therewith should become impossible, the pol. should not, for that reason, become void; but (2) it would still become incumbent on the insured to show that the requisite number of buckets, in good and serviceable condition, were at the places designated in the pol. ready for instant use.

1873.—There was intro. to Parl.: *A Bill to make Provision for Investigation into the Causes and Circumstances of Fires.* We have given a detailed outline of its proposed provisions in our art. CORONERS. The measure was introduced by Mr. Peter M'Lagan, who had been Chairman of the Select Parl. Committee in 1867; but it did not go forward.

During this year a Committee of the So. of Arts sat to consider "the Means of Protecting the Metropolis against Conflagration." The Rep. of this Committee, pub. in the Journ. of the So. April 10, 1874, points out that the growth of manufactures and commerce had occasioned the construction of immense warehouses, without the requisite add. of special securities against fire. Some of the largest warehouses had only supplies of water for minor domestic uses, while for adequate protection water should be available on the instant, in increased quantities at high pressure. It appeared that only about one-third of the mains of the water cos. were kept in that condition. The Committee say:

> The evidence appears to be conclusive, that if with the present water supply, a fire occurred during a hurricane, an extensive conflagration must take place. The late Mr. Braidwood declared that if once a fire got ahead in one of the large stacks of new warehouses during a high wind, there was no existing power of staying it; and that another Great Fire of Lond. would occur one day or another, if the local administration and arrangements were allowed to remain as they then were, and still are. . . .
>
> While the pop. of the metropolis has more than doubled during the last 40 years, and the provision against fire by fire stations and engines has been augmented from 19 to 50, or, including some special stations, to 60, the number of fires has, according to the Rep. of the present Chief Officer of the Fire Brigade, more than trebled. *It is in evidence that a large proportion of the increase of the ordinary fires may be ascribed to incendiarism for ins. money;* and defensive provisions against this as well as against the fires arising from common accidents are required.
>
> The ins. cos. urge that, besides putting the water supply of the metropolis on a complete system of constant pressure in all the branches, as well as the trunk mains, the whole of the works of the 8 separate districts of supply should be capable of being united, *so as to enable the entire water power of the entire water supply*, suburban as well as urban, of the north as well as the south side of the river, to be brought to bear for the service of any one district. . . .
>
> Accelerated as the arrival of engines has been by the increase of stations and the improved organization of the Fire Brigade, they yet, in a large proportion of cases, arrive only in time to prevent the spread of fire, and not to extinguish it, or save the premises where it originated. For the means of prevention to be effectual, the engines must be at all times close at hand.
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> The example of *Manchester*, where the supply of water is under public control, on the constant system, illustrates the results to be obtained by closer means of relief. There the whole arrangement is in the hands of the police, and at every police station there is a hose-truck, or cart, with a fire escape on wheels, containing 200 yards of hose and all the necessary appliances to supply two effective streams of water from the constantly charged mains—a powerful equivalent to two hand engines of 7 in. cylinders. The water mains of that city are all "hydranted," and give off jets of an average height of 80 feet. The distance between the police stations there is about half a mile; but from the greater readiness of the men running out with the hand-hose-truck, than harnessing horses, and the instant application of the water on arrival at the spot, the water appears to be brought to bear, *as a rule, in a third of the time required in Lond.*, and, as it seems, with more than two-thirds of gain in the result. The larger engines, steam or hand, such as are in general use in Lond., are only brought out in Manchester in instances where, from the add. height of the houses or otherwise, add. power is needed. In only about 3 p.c. of cases is such add. power required in *Glasgow*, which is on the same system.
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> Where more than a sixth of the property is destroyed, the loss in Manchester is ranked as

> "serious," and of those so classed the loss has been about 3 p.c. In 1873 the much more serious fires in London were below the average, and they amounted to 11 p.c. *In Manchester there has not been one case of the total destruction of property in 3 years;* and but 3 cases during 12 years of loss of life from a building taking fire.
>
> In *Liverpool* and in *Glasgow*, where the fire arrangements are under the police, the stations multiplied, and the relief speedy, as in Manchester, and the water supply on a public footing, the results are much the same—the average loss of all classes less than one-third those of Lond. . . .
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> It is to be borne in mind that the chief service of fire engines in such instances as those cited of Manchester, Liverpool and Glasgow, as well as in the metropolis, is to give increased power, and higher jets than those which can be obtained on the spot from the mains,—the power will vary with higher or lower levels, or with the amount of distribution that may happen to be going on at the time. During the hours of the private distributory service, the pressure on all the mains is lowered, and it is then especially that fire engines are needed to give additional elevation to the jets. But it has hitherto been overlooked that extra engine power is the less needed in those cities, on a constant system of supply distributed under public authority, and well preserved, than in districts under an intermittent system of supply. Such a supply is shown to be wasteful in a high degree, and all waste of water may be considered as waste of power. The quantity of water distributed in *Manchester* is on an average about 21 gallons p. head of the pop.; in Lond. it is 33 gal. p. head; and this excess in Lond. is waste and loss of power. In Lond. as a rule the jets will be more than one-third lower than in Manchester, and hence, under the existing conditions of the intermittent system, there is the greater need of engine power to augment the force.

The question of the intermittent as against a constant supply of water will be fully considered under WATER SUPPLY. It probably bears with equal importance upon the measure of Public Health as upon the efficiency of FIRE PROTECTION. A good deal of add. information on the subject is contained in the Rep. before us.

We now arrive at the "conclusions adopted from all the evidence, as well that taken before recent Parl. Committees, as that taken before this Committee," which are as follow:

> 1. That of the separate sections of the 8 trading water cos. services in the metropolis, only about one-third of the mains are kept in a state of constant high pressure, by the want of proper hydrants and apparatus in constant use and preparation. There is frequent delay in obtaining adequate supplies for extinguishing and preventing the spread of ordinary fires, causing frequent loss of life, and great loss of property.
> 2. That from these defects in the existing provisions for protection against ordinary fires and incendiarism, and from entire dependence on separate sectional and independent supplies with only the existing defective apparatus, the metropolis is now, from large and increasing masses of ill-protected buildings, peculiarly exposed to increasing dangers, on the occurrence of any fire from accident or design during hurricane winds, to devastating conflagrations, such as those which have occurred at Chicago and Boston.
> 3. That to guard against extraordinary conflagrations, as well as to check ordinary fires, measures ought to be taken with the least delay to put the whole of the metropolis on the constant system of supply, under such conditions that the entire force of the whole area of supply may be brought to bear upon any considerable fire occurring in any part of it.
> 4. That whilst there are frequent serious deficiencies in the supply of water under the existing conditions, there is a constant waste of between 30 and 40 millions of gallons daily—a quantity equivalent to the adequate supply of between 1 and 2 millions of add. pop.; a waste which lowers power, and can only be saved by putting the entire supply on a public footing.
> 5. That whilst the executive arrangements for the administration of the supplies are disjointed and defective in important parts, there is an estimated waste of upwards of £100,000 p.a. of expenditure beyond what would suffice for the administration of a more efficient combined system of local administration.
> 6. That this sum, which may be saved by unity of management, would suffice to relieve the consumers of water from the expenses of altering their house services, to defray the expense of the new hydrants required, and of making the other arrangements needed for the protection of the metropolis against extraordinary conflagrations, as well as to give better protection against the ordinary losses of life and property from fire, as well as effect some needed sanitary improvements.
> 7. That under practical arrangements, and whilst the shareholders and officers of several cos. may receive liberal compensation on recognized principles, the consumers may receive an improved constant supply, and the public may receive an add. service, without add. rates.
> 8. That, from the inadequacy of administrative areas and from defective constitutions, inadequate functions, and from the want of the special scientific preparation and special agencies needed—the chief existing local authorities, as now constituted, are ineligible to effect with efficiency and economy the complete change of the system of metropolitan water supply required.
> 9. That under existing conditions, and the urgency of the earliest arrangements, the most expedient practical course for protecting life and property, and staying accruing waste, will be to appoint a Special Commission, provisionally to get the several parts together, to supply the specified defects in the apparatus, and to get the whole into the earliest complete action, in one system, and that system a public one.

They add, that there are questions remaining for consideration, as to the alterations required in the functions of the police in connexion with those of the F. Brigade; for working an improved system of water supply for fire prevention; also questions of structural arrangements for the prevention of fire; and the collateral sanitary question as to street cleansing and road watering by jets from the hydrants, which are not so immediately pressing as those treated of, and that may stand over for special examination and report.

The late Dr. Fothergill bequeathed to the So. of Arts (1821) funds to enable it to offer a gold medal for the furtherance of certain objects, of which he proposed for the consideration of the So. the following: 1. The best method of preventing destructive fires, and of detecting incendiaries. 2. Of speedily extinguishing fires when water is scarce. 3. Of speedily securing valuable property from the flames, and also from thieves. 4. Of preventing or diminishing the numerous fatal disasters from fashionable muslin dresses catching fire, whether by rendering such dresses less combustible, or having constantly in readiness a cloak of incombustible fabric, composed of asbestos or amianthus, with which instantly to enwrap the whole body. 5. Paper of this kind (incombustible) might preserve from fire valuable deeds and other manuscripts. A premium for the encouragement of such a manufacture is also earnestly recommended. The above to be varied at the Society's discretion. The So. offered the medal this year (1873) "for the economic production of uninflammable wood, so as to render buildings in which it is employed less destructible by fire." We believe the medal has not yet been awarded. [FIREPROOF TIMBER.]

Mr. Thomas Page, C.E., in a letter to the *Times*, said :

> The metropolis is amply supplied both with water and engine power from the reservoirs and by the engines of eight water companies, whose names and engine power are as follow :—The New River Company, 1800-horse ; the East London Waterworks Company, 1250 ; the West Middlesex Waterworks Company, 1200 ; the Grand Junction Waterworks Company, 1800 ; the Chelsea Waterworks Company, 1025 ; the Southwark and Vauxhall Waterworks, 1990 ; the Lambeth Waterworks Company, 1300 ; and the Kew Waterworks Company, 1183 ; thus commanding an aggregate of 11,548 horse power. But to render this great engine power available at all hours for the extinction of fires the intention of the Legislature for securing the constant supply system should be carried into effect, and it is almost incredible that any opposition should have hitherto prevailed to prevent the accomplishment of so great a measure. . . .
>
> The system I would suggest for the metropolis is, that until the constant supply is introduced, the Chief Officer of the Fire Brigade should telegraph to the engine station of the water company in whose district the fire occurs to work the engines at full pressure, or according to the pressure required for extinguishing the fire. Hydrants being fitted to all the pipes and the furnace fires of the boilers in readiness, then, instead of the buildings attacked by fire and their contents being destroyed, the engines of the waterworks would throw such a body of water upon the fire, the hose guided by the Fire Brigade, that danger would be greater of being drowned than being burnt.

At the National Convention of the Chiefs of Fire Departments in the U.S., held in *Baltimore*, in Oct. this year, the programme for general consideration embodied the following heads : *Prevention* :—1. The limitation or disuse of combustible *materiel* in the structure of buildings ; the reduction of excessive height in buildings, and the restriction of the dangers of elevator passages, hatchways, and mansards. 2. The isolation of each apartment in a building from other apartments, and of every building from those adjoining by high party-walls. 3. The safe construction of heating apparatus. 4. The presence and care of trustworthy watchmen in warehouses, factories, and theatres, especially during the night. 5. The regulation of the storage of inflammable *materiel*, and the use of the same for heating or illumination ; also the exclusion of rubbish liable to spontaneous ignition. 6. The most available measures for the repression of incendiarism. 7. A system of minute and impartial inspection after the occurrence of every fire, and rigid inquiry into the causes, with reference to their future avoidance. 8. Fire escapes actually serviceable for invalids, women, and children.

Extinguishment :—1. The best mode of organization, and the most effective system of discipline for Fire Departments ; and the importance of separating the departments from political influence. 2. The best description of apparatus, including engines, hose, hose carriages, hook and ladder trucks, and chemical extinguishers. 3. The importance of uniformity, as far as possible, in standards of hose couplings and fire hydrant connexions. 4. The necessity of large supply mains as well as sufficient supplies of water. 5. The economic use of water, and its judicious application at fires. 6. Increase in the number of fire hydrants relatively cheaper than the cost of hose. 7. A fire alarm telegraph thoroughly automatic and reliable. 8. The importance of the control and regulation of the supply of water, telegraph, engines, and apparatus generally under one jurisdiction instead of subjecting them to the divisional authority generally adopted. 9. Collateral assistance from patrols or salvage corps, small engines or portable extinguishers, and store or factory brigades drilled for emergencies. 10. A trained corps of sappers and miners as an auxiliary in large cities. 11. Finally, though not least in importance, the need of a complete understanding between those whose duty it is to extinguish fires and the ins. cos. which have to indemnify the loss of property destroyed.

The Governor of the State of New York, seeing that the fires in Chicago and Boston would prob. lead to a revision of the existing laws in his State relating to buildings and the storing of combustibles, took the opportunity in his ann. message of recommending that no modification of the then existing laws be made without the consent of the N.Y. Board of Fire Underwriters and the Commissioners of the Fire Department : the first as having, besides their special knowledge, a large pecuniary interest at stake, and the other from their familiarity with the causes of conflagration and the best modes of contending with it. He also thought the American Institute of Architects might be associated with advantage. In this we have a good instance of the practical sagacity brought to bear upon such questions in the U.S.

The *New York* Board of Assistant Aldermen passed the following resolutions :

> 1. That the Commissioners of the N.Y. Fire Department be requested to cause a particular and personal examination to be made of all planing-mills, saw-mills, and all other extensive wood-working estab. in this city, and to report to the Board whether any such mills or estab. are so situated as, in case of their destruction by fire, to cause serious disaster to neighbouring buildings ; and also what measures should be taken to diminish the danger of serious loss and destruction to the city by a conflagration originating in such mills or estab.
>
> 2. That the Commissioners be requested also to report to this Board whether the laws relating to the storage and sale of the products of petroleum, and the storage and sale of gun cartridges, per-

cussion caps and other explosives, are enforced, and whether, in their judgment, any additional laws or ordinances are needed to guard the city from the danger of disastrous conflagration, originating from the storage or use of these articles.

Mr. Joseph Bird, of Boston, U.S., pub. a work : *Protection against Fires, and the Best Means of Putting Out Fires in Cities, Towns, and Villages, with Practical Suggestions for the Security of Life and Property*. The book is written in a popular style, but we do not find that it contains anything new.

The *Massachusetts* Legislature passed a measure designed to secure, under proper inspection, a better class of buildings, and a more effectual prevention of fire and preservation of life and property.

1874.—During this year several very important measures were introduced in view of increased Fire Protection in the metropolis. We shall speak of these as far as possible in their chronological order.

Col. Beresford obtained leave to introduce to the House of Commons a Bill "for making more effectual provision for a Constant Supply of Water, and the Protection of Life and Property against Fire in the Metropolis." The scheme of this Bill was generally approved ; but it was ultimately defeated by the influence of the water cos.

The next measure was the "Metropolitan Buildings and Management Bill," promoted by the Metropolitan Board of Works, the scheme of which was to consolidate into one measure the provisions in regard to Buildings and Fire Protection generally in the metropolis, which have been embodied in the legislation of the last 100 years—going back to and including 14 Geo. III. c. 78 (1774). To regulate the height and cubical contents of new buildings, and the width of new streets; to remove all dangerous structures ; to watch more carefully than hitherto over the internal arrangements of dwelling-houses ; and many other points affecting public health and public safety ; were the objects of this measure. But just in proportion as its objects were good and praiseworthy, did it encounter opposition on all sides. Vested interests in things "as they are" can too readily set up the cry of "dangerous innovation." It was proposed by this measure to bring under supervision the numerous "arches" of railway cos., now let for all kinds of purposes not orig. contemplated, and in which there had occurred within 8 years 57 fires ; but the railway cos. strenuously opposed. The opposition of the dock companies was based on very similar grounds, and dealt mainly with the proposal to take from them the right of control over such waste lands and open spaces as might, though without their premises, be within their control. The object of this proposed change was merely to prevent the obstruction of the public thoroughfares or the possibility of fire by the storage of such material as timber beyond the line now drawn by law. It is one on which we need not dwell, as no interference with the docks themselves, or with the conduct of business inside their premises, was intended ; but only a general supervision in the public interest over waste lands and unused spaces from which danger or inconvenience might be apprehended. Again, the opposition of the brewers was directed against the proposed limit of cubical feet in their buildings, enlarged from 216,000ft. to 300,000ft., and the vertical division by party-walls of all such as exceeded that limit.

Under the existing law the height of the building is regulated by the width of the street—a very obvious and sensible way of preserving to each inhabitant his due proportion of light and air. In Liverpool the limit runs from 60 to 65 feet, and this limit the new Bill would adopt for the City of London. It must be admitted that the smaller a building is the more easily can it be managed in case of fire. Although water can be thrown to a height of 80 or 90 feet, of course it can more easily be directed to any part of a building not more than 50 ft. high; while at present it is hardly beyond the same height that fire escapes and ladders can be carried with safety. On the other hand, in large foreign towns the buildings in all the modern streets are far in excess of this limit. Even in our own city, the model lodging-houses of the Metropolitan Association, or Peabody's trustees, which are built as near as possible to the heart of London, rise occasionally to a height of 65 ft., but in these buildings there is exceptional provision made against fire. The passages leading from the external staircase to the entrance-doors are fireproof, so that on opening the door of your room you step at once on to a fireproof floor. Again, from the fact of all ventilation being back and front, instead of up and down, the fire, as has been proved by experience, is confined to the particular tenement in which it may arise ; and, lastly, all the staircases are without the external wall of the buildings, so that escape is as open to the inhabitants of the topmost story as to those on the ground floor. The measure was not absolutely against the increased height of buildings in suitable localities ; but the Bill sought to enforce proper precautions in all such cases. It was urged by the opposition that the New River Co. could deliver water as high as 70 ft.

It was proposed to appoint a special magistrate to deal with all cases arising out of the proposed Act—an excellent suggestion ; but the opposition killed the measure. We hope to see it some day revived.

Finally the Gas and Water Committee ot the Common Council, appointed to report upon the Water Supply to the City in case of Fire, presented an able and exhaustive Rep., in which they state that they were naturally desirous of obtaining every information upon so important and vital a question, and they were enabled by the courtesy of the Metropolitan Board of Works to obtain much valuable evidence upon the subject from Captain Shaw, the chief officer of the Metropolitan Fire Brigade. They had also the assistance of Mr. Muir, the engineer of the New River Co.

The Rep. next refers to the present condition of the water supply of the City, and it appears that the City receives its water supply almost entirely from the New River Co. The engineer says that the Co. have now provision for a continuous daily delivery of more than 36,000,000 gallons of water, with a present daily demand of about 25,000,000 gallons; and they also have a right to pump to any extent from the River Thames below Blackfriars for any service of a "non-domestic" kind; also that, exclusive of the ponds at Hampstead and Highgate, which hold together about 30,000,000 gallons, the Company have high service reservoirs containing more than 20,000,000 gallons, and a further store at lower levels of more than 100,000,000 gallons. The Co.'s engine power is now sufficient to raise water into their upper reservoirs at the daily rate of 50,000,000 gallons: and all the contents of these various reservoirs are available for use in the City, in which they have 78 miles of pipes, 25 miles of which are constantly under pressure.

With regard to the water supply required for extinction of fire in Lond., Captain Shaw reported that in the whole of the metropolis it had not been much in excess of 8,000,000 gallons, and he distinctly stated to the Committee that there had been no difficulty from any insufficiency of water supply for extinction of fire in the City, whatever occasional delay there might have been in obtaining the required service. It also appeared that the pressure of the present water supply of the City had sufficed hitherto, and might be greatly increased. The Committee, however, express their opinion *that the system of street plugs, which makes the attendance of a turncock necessary before water can be obtained, is not suitable to meet sudden emergencies, which must necessarily occur in every case of fire;* and that, to secure a quick obtainment of water, it is absolutely essential, for the protection of public property, that a proper number of constantly charged hydrants be fixed which will represent an immediate supply of water.

Taking into consideration the important interests involved in the question, the Committee were of opinion that every possible means should be provided for the rapid extinction of fires by an immediate supply of water; and that, although it had been shown that the supply and storage of water is ample, the present means of procuring it at fires were not equal to the emergency of the case, and that this difficulty might be met by the use of hydrants constantly supplied with water; and having in view the immense amount of property within the City, and the extensive fires which from time to time occur within its area, they thought that for the protection of the citizens of Lond. it was highly desirable that the Corp. should take the lead in estab. a system which there could be no doubt would be a most useful adjunct in preventing the extension of fires. If the Court agreed with this, the Committee asked that it should be referred back to them to consider the means of carrying it out.

The Rep. was referred back to the Committee, which subsequently (1875) reported that it was desirable to establish hydrants, to be kept constantly charged, at every sixty-six yards in the City streets, in order to maintain an efficient water supply for the rapid extinction of fire. Hydrants are now being rapidly erected throughout the City. It has been stated that the cost of 900 hydrants would not exceed £10,000.

A Committee of the National Board of Fire Underwriters of the U.S. was deputed to attend the 2nd Ann. National Convention of the Chiefs of Fire Departments in the U.S. held at St. Louis this year. The points discussed at the Convention, and reported upon by the Committee, were the following:

I. Does the existence of any direct acting [water] service system justify the reliance on that system alone for the extinguishment of fires, without the aid of auxiliary moving fire engines? [Hydrants.]

II. How far are paid Fire Departments applicable to small towns and villages?

III. Fire parapet walls in the mercantile sections of cities, and the safest roofs for said buildings? [Fire Fence.] [Party-walls.]

IV. Importance of Chiefs of Fire Departments having exclusive and supreme control of all men employed therein, and of all property pertaining thereto; the necessity of strict discipline in all Fire Departments; the discouragement of such gatherings, and the exclusion of all political considerations, which tend to destroy discipline.

V. What is the proper relative proportion of trucks to fire engines in a well-organized department?

VI. The necessity of larger mains, and more abundant supply of water for the use of fire engines; and in laying said mains, the necessity of providing for the wants of the City at least 10 years in advance of the time said mains are laid. [Fire Extinguishment.]

VII. The advantages of stand-pipes, hose-elevators, and stationary ladders. [Fire Ladders.] [Hydrants.]

VIII. The duty of City authorities to prevent the erection of buildings over a certain height, which are not constructed entirely of fireproof materials. [Height of Buildings.]

IX. The proper arrangement of iron shutters. [Fire Shutters.]

X. The necessity of relief engines, and the necessity of keeping them in good condition, and in charge of competent men.

XI. The importance of the position of engineer, and assistant engineer, of fire engines, and of the said offices being filled by practical machinists.

The *Ins. Times* of N.Y. offered the following excellent obs. on Fire Protection in the number for Nov. this year:

> The duty of guarding against the occurrence of fires, and of extinguishing them, in city, town, or village, belongs somewhere; and the question, Who is responsible for its performance? ought to be settled at once and for ever. The fire ins. cos. should not fulfil it, for they have no right to swell their expenses, and consequently raise their rates, by engaging in an undertaking they cannot

properly execute. They have not the requisite power. As they do not govern the people, they cannot make or enforce the laws necessary to most effectually prevent and quench fires. The task exceeds the ability of any individual property owner; and it is sufficiently manifest that the duty appertains to the corp. or gov. of the place needing the protection and aid. Every householder should take proper precautions against the outbreak and spread of fire on his own premises. Every city, town and village should do the same and more, for corporations or local governments are bound, as far as possible, to prevent the negligent, reckless and criminal from endangering the property and lives of their neighbours and fellow-citizens.

In the U.S. this year an ingenious adaptation of the system of "Fire Sprinklers" was made by Mr. Charles W. Mills, of N.Y., under the designation of "Mills' Fire Protector." Where it is impossible or undesirable to keep the tank and pipes constantly charged, by his process the fire engines can be made to distribute their supply through the sprinklers placed in the building, or through those on any particular floor; thus avoiding the damage sometimes done by unnecessary drenching of the stock or products. *The exterior walls can also be kept flooded.*

1875.—In the (Lond.) *Times* of 30 Oct. this year there appeared a letter signed "A Fire Office Manager," in which is contained some most excellent suggestions for increasing the means of instantaneous communication through the metropolis. He proposed that there should be estab. Guard-houses at suitable points throughout the metropolis, at which should be stationed a policeman, the fire escape conductor, the omnibus time keeper, etc. There should be from each Guard-house means of telegraphic communication with the fire brigades and police stations of the metropolis. On the occurrence of a fire, the call would be delivered to the nearest Guard-house, and hence would be known at all required quarters forthwith. The suggestion is a most excellent one, and should be forthwith adopted.

The letter also contains the following statement of the comparative forces in the great commercial capitals of Europe for the arrest of fire:

	Pop.	Engines	Strength of Brigade
London	3,254,260 ...	95 ...	396
Paris	,, 1,851,000 ...	,, 203 ...	,, 1500
St. Petersburg	,, 667,963 ...	,, 37 ...	,, 1149
Berlin	,, 826,341 ...	,, 50 ...	,, 1090
Hamburg... ...	,, 240,251 ...	,, 53 ...	,, 789
Lyons	,, 323,417 ...	,, 48 ...	,, 475

which may be read as supplemental to our art. FIRE BRIGADES, FOREIGN.

Attention is being paid to the protection of our public buildings. The authorities at *Lloyds*, who occupy a very considerable portion of the Royal Exchange, acting upon the suggestion of Captain Shaw, have had fitted up an elaborate apparatus for the speedy extinction of fire, should such arise. At the top of the building are placed two large wrought-iron tanks, capable of containing several thousand gallons of water. From these a service of wrought-iron high-pressure tubes convey the water to nine hydrants, with hose attached. One of these commands the entire roof. The other hydrants are distributed about the offices, and the peculiarity of the arrangement is that any one of these hydrants may be used against any part of the building or offices. It is considered that by these means it will be impossible—considering the effectiveness of the arrangements for watching the building—for a fire ever to do much damage. The apparatus is very simple, and can be brought into use at a moment's notice. Early in 1876 the necessity for testing this apparatus arose. It answered perfectly.

A mechanical means of protecting buildings against fire is patented under the designation of "Brannon's Stone Felt," a sort of concrete composed of calcined materials, with an internal wire webbing. This so-called felt presents externally the appearance of hard freestone, and when wood or other inflammable substances are carefully covered with, or protected by it, they are entirely uninflammable. The most exposed portion of the dome of St. Paul's has been protected internally with this material; and in other places it is coming into use. [This is identical with the process of the "Monolithic, etc., Co.," mentioned under FIREPROOF BUILDINGS, 1873.]

The Dean and Chapter of St. Paul's have given the subject of the protection of the Cathedral from fire a good deal of attention. A telegraphic communication with the central station of the Fire Brigade has been estab.

The Governors of Christ's Hospital have had a complete system of hydrants and mains estab. over that entire building, under the advice of Captain Shaw; and the boys have been drilled in their duties in case of fire.

The Wallace-Tucker Fire Annihilating Co. was projected for the purpose of purchasing certain patents, some of which we have already noticed under FIRE ANNIHILATORS, and also a further patent for improvements relating to the protection of houses and other property from fire. [FIRE EXTINGUISHMENT.]

Mr. J. A. Coleman, C.E. (U.S.A.), read a paper before the So. of Arts on *An Apparatus for the Protection of Buildings and Ships from Fire, and for the Ventilation of Ships.* We have given an account of the system proposed under FIRE EXTINGUISHMENT.

In the U.S., as is to be expected, considerable attention continues to be paid to Fire Protection—a constant stimulus in this direction being supplied by the action of the National Board of Fire Underwriters, and its various sub-committees. The Committee on Construction of Buildings, with Mr. Walton as its Chairman, brought up a Report this year containing the following:

We recommend that in the case of all cities of over 100,000 inhabitants, where the present laws are deemed inadequate, the executive committee be instructed to furnish copies of either of the laws of New York or Boston, or the proposed law for cities of over 100,000 inhabitants in the State of Illinois, whichever may be in their judgment best calculated to meet the requirements of the particular city, with instructions to the local boards to use every reasonable effort to procure the adoption of a kindred law; and that, in the event of the failure to make the proper effort in that direction, no application for a reduction of the rates in any such city shall be entertained.

Your Committee are of the opinion that the most speedy and effectual way to provide for the cities of less than 100,000 inhabitants is by enactment of a general law in each State, covering all the cities in said State containing over 10,000 and less than 100,000 inhabitants. . . .

In all villages and towns where it is not practicable to adopt a general building law, there are two points which might readily be provided for, and which your Committee regard as of great value, viz.:

1st. To require that, in all frame rows, an unbroken brick wall of not less than eight inches in thickness shall be built at every 50 feet, and that such wall shall be carried at least two feet above the adjoining roofs.

2nd. That all buildings over 18 feet in height shall have non-combustible roofs.

All large cities should have a restriction limiting or grading the height of buildings by the width of the streets, unless the exposures are properly guarded.

Every building should be planned and constructed with reference to the uses to which it is to be applied; but certain provisions against the origin and spread of fires should in all cases be required.

Mr. Supt. Chapman, in the 16th Ann. Rep. (1875) for the State of N.Y., offers the following obs. embodying a scheme for Fire Protection:

That many fires are purposely kindled or permitted, in order that the incendiaries may profit by the ins., will not be denied. Nor will it be questioned that very many others originate in pure negligence, which in a matter of this kind is of hardly less turpitude than the crime. These two elements of danger so increase the average risk assumed by the co. as to very materially increase the average prem. paid by the insured. This "moral" hazard, as it has been styled, is variously estimated at from 30 to 50 p.c. of the whole. Even if the lowest estimate be correct, the honest insured are compelled to pay, *by reason of the anticipated iniquity of the dishonest and negligent, very much more for protection than would otherwise be required.* Enough is known to make it certain that profitable arson and stupid carelessness are important factors in the problem—how high a prem. will give at once a fair int. on investment and adequate security to pol.-holders? But they are factors which do not belong in that problem, and so far as possible they should be eliminated. The insured themselves can do this, but they never will until they are made to see that it is for their interest to do it. Obviously, so long as arson or carelessness can be made lucrative, mere moralizing on the evils thereof will be futile to prevent either. Nor will any law be sufficiently effective, which is only directed towards securing uninflammable buildings, well-organized and equipped fire departments, or investigations as to the origin of fires and the punishment of offenders. All such laws will, indeed, *tend to protection*, but they do not quite reach the impulses which prompt the profitable use of the torch, or that stolid indifference which complacently fattens behind a full ins. They do not seem, somehow, to apply the plaster quite close enough to the seat of the disease.

If a law could be devised, which would certainly and absolutely make it for the interest of every insured person *to prevent fires escaping from his premises to another's*, a long step would be taken in the required direction. Now, although it would not perhaps be possible, or even desirable, to apply such a law to city and country alike, may it not be otherwise as to cities alone, in which no fire can ever occur without threatening general destruction? *The good conferred upon many by a law which would tend to prevent careless or wilful fires in cities, would counterbalance much injury received in consequence thereof by the few.* With this proposition kept constantly in mind, let the legislature examine the following suggestion: Would it be wise to enact a law which shall provide, *that no person upon whose premises a fire originates, if such premises are in a city, shall recover more than one-half of the value of his ins., provided any other contiguous building shall be burned by reason of such fire?*

He says he presents the thought here suggested "in this bald unqualified form, in order to give the bare kernel, unobscured by any of the husks or chaff of necessary modifications," and demands for it careful consideration. He proceeds:

If every man who is meditating a fire for profit, could be made to feel that he would only obtain one-half of his ins., provided any other person should be injured by that fire, it surely needs no argument to show that thereby self-inflicted arson would be less attractive, and the chances of its being made gainful more difficult. So also, that if every person owning insured property knew that in case a fire was allowed to escape from his premises to another's, he could only recover one-half of the value of his property insured, *he would realize that he himself has an interest in being watchful, in personally supervising the method on which his building was constructed, whether its plan was adapted for its beauty or its safety, and whether its heating apparatus had possibilities of danger.* He would also be prompted to inquire whether tenants are prosperous and trustworthy, whether night-watchmen can be safely dispensed with, and if so, whether the last man to leave the building at night is careful, prudent, and safe, whether inflammable materials are kept on the premises, and especially whether in case a fire should originate therein proper means for extinguishing it and proper protection against its spreading to another person's property exist.

He summarizes the results of his proposal into the following short form. It is aimed to make it the interest of each insured person in a city to see (1) that no fire can originate on his premises; and (2) if it does, that proper protection and proper appliances are ready to prevent its passing over upon another's territory. We present the idea in the form it is given, and as being worthy of earnest consideration.

A Committee of the *Chicago* Board of Fire Underwriters sums up what has been done to protect that city from fires since July, 1874, when the attention of the National Board was prominently directed to it, as follows:

Almost every prominent business building has been supplied with iron shutters on all side and rear openings, and the exact number of buildings "shuttered" since July has been 188. The length above roofs of walls between buildings has been increased as a rule from eighteen inches to three feet. The fire ordinance—which prior to July 14 included only a part of the city—now includes the whole city, and by its provisions no more frame buildings can be erected.

The fire department—which before July 14 was somewhat loosely managed—is now divided into six

> divisions, with an assistant marshal in charge of the whole. Thirty-eight watchmen to watch for fires have been put on within a few months; they are stationed on the engine-house towers; four new steamers purchased, two in commission and two for reserve force; 12,500 feet of hose additional to supply at time of July fire, purchased and on hand for use; two Babcock engines, one hook-and-ladder truck, equipped.
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> Over 500,000 dols. have been expended in improvements in water supply since July. Since October 1, over 12 miles of water-pipe have been laid, the great majority of which was large size, and 8 miles of it in the business district, all 8 inches or larger. During 1874 the amount of water-pipe laid was 36 miles. Thirty fire cisterns have been built—14 of them supplied by pipes, and each sufficient to supply 4 steamers at once; and 16 of them are openings into the new water tunnel running under the city, running south-west from the water-works to Blue Island Avenue and Twenty-second Street, the tunnel now having water let in, and the supply being exhausted only when Lake Michigan is. The new pumping works at the shore end of the tunnel are now in progress of construction, and will be finished during this year.

We have mentioned in our hist. of F. Ins. that about the close of the 17th century a scheme was set on foot for making *Fire Protection* supersede the necessity for *Fire Ins.* The system was tried again in the manufacturing district of *Lowell*, Massachusetts, about 1850. A number of the large manufacturing estab. in that place, whose mills are contiguous to each other, adopted a system of apparatus for mutual protection, and subject to most rigid police regulations. Each mill has a complete set of pumps and "sprinklers" to protect itself; but if necessary all the mills can direct their force to any given point. The value of the property so combined for protection was estimated at 13,000,000 dols. We saw it stated recently that the loss during a period of 25 years had been less than 300,000 dols., which had been defrayed by a ratable assessment on the different properties. We think there are circumstances even here in regard to water power and in respect to community of interest, which do not apply, for instance, to cities and towns ordinarily. Again, these mill risks are not generally in such close proximity as to endanger each other. Then there was the orig. cost of the apparatus, which requires repair and replacement from time to time. See Fire Extinguishment.

Early in this year Mr. Andrews, the U.S. Minister resident in Stockholm, addressed to the Secretary of State, Washington, a letter, wherein he describes the many wise precautions which have long prevailed in Stockholm regarding the construction of dwellings in view of the prevention of fire. As a consequence, buildings constructed in conformity with these regulations are insured at 1 p. 1000. By a law which came into force the 1st of Jan. this year, regulations regarding buildings are extended to all the towns and larger trading villages of *Sweden*. By this law streets in modern towns are to have a width of 60 ft., and in older towns of 40 ft. No building is to be higher than the width of the street in which it stands, with 5 ft. in add. No dwelling-house is to exceed 5 stories in height. [Height of Buildings.] Every city and trading village must select a building committee, to whose care these regulations, and many others equally practical and important, are to be confided. Wooden buildings are only allowed to be put up outside the towns. [Sweden.]

1876.—Captain Shaw pub. a pamph.: *Fires in Theatres*, wherein many practical suggestions are offered regarding fire prevention in these hitherto very combustible risks. His suggestions also extend to the protection of surrounding property. [Theatres.]

At the meeting of the Architectural Asso. held in March this year, Mr. T. Roger Smith read a paper on the *Metropolitan Building Act*, wherein he criticized its provisions, but adopted and maintained the view that "many apparently capricious provisions of the Act are really precautions of greater or less value, against some part of the risk of conflagration." He admits that stone is no longer to be regarded as a fireproof material.

In our art. Fire Annihilators, we have given an account of many scientific appliances for the suppression of fires; while under Fire Extinguishment we have shown some of the various known appliances in practical use. The latest development is the application of one of these to Fire Protection on a large scale:

> The proprietors of the N.Y. *Tribune* have lately put into their new building a novel fire-extinguishing apparatus, which is ingeniously arranged and effective in operation. It was made by the Champion Fire-Extinguishing Co of Louisville, Ky. A number of gentlemen recently assembled in the *Tribune* composing-rooms to witness the first trial of it. The engine is placed in the sub-cellar of the building, and consists of a cylindrical tank, holding about 180 gallons of water, and hung on pivots in such a way as to be inverted on the lifting of a latch-rod. About 60 pounds sub-carbonate soda are mixed with the water, and in the tank is a jar containing 28 lbs. sulphuric acid. When the tank is inverted, the chemicals are mingled together and produce carbonic acid gas, by the expansive force of which the waste water is driven out with a pressure of 150 lbs. to the square inch. From the tank to the top of the building runs a standpipe, to which is attached a stop-cock and hose in each story. A wire rope, connecting with the trip, also runs through the building. In case of a fire, it is only necessary to pull the wire rope on any floor, open the stop-stock, and direct the stream on the fire, the whole occupying about 20 seconds.
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> In the first trial, the trip was pulled from the composing-room, eleven stories above the engine, and 20 seconds afterwards a stream of water charged with carbonic acid gas was pouring from the nozzle of the 50-foot hose. With an elevation of 176 feet, and a length of pipe and hose amounting to 251 feet, a stream of water was thrown horizontally 75 feet from the nozzle against a stiff wind. It was estimated by those present that the stream of water could be kept up about half an hour. Several interruptions were made, as the stream was directed from different windows. After the force of the engine was exhausted, the spectators went to the basement, and witnessed the tripping of the tank. The tank was then refilled and made ready for use, the work occupying about ten minutes.
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> The main point in which this apparatus is believed to be superior to all others is the quickness with which the stream can be directed on the fire after it is discovered. A single person in any story, on discovering the flames, can immediately do the work which with other engines requires the aid of additional persons, and usually a journey to another room and back again. In an ordinary building,

> several stories in height, before a person could descend from the top to the basement, or warn the engineer of the danger, the fire might gain such a headway that no power could extinguish it. The apparatus is moreover simple in construction, and so made that it will not fail to act at a moment's notice, though allowed to stand for ten years without a change of chemicals.

In a most able Address delivered by Mr. Edgar A. Hewitt, of the *Chronicle*, N.Y., before the Underwriters' Asso. of the South, held in New Orleans, in April, there were reviewed many of the causes operating against Fire Underwriters in a direction opposite to Fire Protection. The following may be taken as a type :

> To aggravate the errors of construction, there is the increased size of modern buildings. Fire consumes in direct ratio to the size of the inclosure in which it originates. It has been kept for weeks within the wooden walls of a ship, and finally extinguished there. It cannot live without oxygen. Churches, theatres, factories, and big buildings generally, burn readily and rapidly, not more because of the combustible nature of their contents than because of their superior facilities for supplying oxygen to feed the fire which consumes them. Such is the height and depth of our warehouses, that the most powerful steam engines cannot throw water to the heart of a fire, except in the form of spray. In this form its oxygen is instantly liberated to add fuel to the flame.

Early in this year, too, a most able Address was delivered before the Michigan State Firemen's Asso. by Mr. Frederick H. Seymour, Sec. to the Board of Fire Commissioners, Detroit, wherein he gave some remarkable estimates regarding the destructiveness of fires, of which we shall reproduce the substance under FIRES AND FIRE INS., STATISTICS OF.

The F. ins. pol. issued in *France* usually contain a provision to the following effect: "In case buildings insured by the Co. shall be damaged or destroyed by order of the authorities, for the purpose of checking the progress of a fire, in such case the Co. will make good the loss." [FIRE INS. POL., *France*, art. 15.]

The *German* pol. contain a similar provision.

We have seen under F. ENGINES, MANUAL, that *China* had these, as she prob. had other appliances for F. Extinguishment at a very early period. We now learn that this most sagacious nation has introduced the element of personal responsibility in regard to fires. Thus if a fire takes place in a city, the local municipal officers are called to an account for it ; and, in view of the authority delegated to them, they are given to understand such things as conflagrations are not to be tolerated. If 10 buildings are burned, the highest official in the city is fined nine months' pay. If more than 30 are destroyed, a year's salary is forfeited ; and if as many as 300 are consumed, he is degraded one degree in his rank. It is grimly said that "this regulation induces a wonderful degree of carefulness on the part of the officials."

In most of the cities of the U.S. there exist Fire Patrols of more or less efficiency. These are sometimes estab. in the interest of the fire ins. cos. ; but in others, and perhaps in the main, by the municipal authorities who regard Fire Protection as an essential portion of their functions. We hold it to be one of the first duties of all Town and City Municipalities to endeavour to protect lives and property from loss and destruction by fire.

While this art. has been in preparation, the subject of Fire Protection has happily again been brought before the attention of Parl. ; and a Select Parl. Committee has been appointed : "to inquire into the efficiency, emoluments and finance of the Metropolitan Fire Brigade ; also to inquire into the most efficient means of providing further security against the loss of life and property by fire in the Metropolis." Mr. Ritchie, M.P., in bringing the matter under the notice of the House of Commons, gave some information on the subject, which certainly does not overstate the case : The present force numbered only 395 men of all ranks, including the chief officers and superintendent. The several watches in Lond. employed 94 men by day, and 181 by night, including those who were on fire escape duty, making a total of 275 for the 24 hours. If they deducted the men with the fire escapes, which numbered 106, it left the metropolis with an area of 120 sq. miles to the protection of 164 men. He would not compare the old Lond. Fire Brigade with the present one, for its appliances had been much improved ; *but the proportion of men to the requirements had diminished.* The fires had increased from 1338 *to* 1559, or just 17 p.c., the numbers of the houses and the pop. had increased 17 p.c., and they had the number of firemen decreased by 20 p.c., even according to Captain Shaw's last estimate. Alluding to the small number of men—34—appointed for the East of London, where the greatest number of fires occurred, and where the risk was greatest, he said that for his own borough, the Tower Hamlets, which had a pop. of 400,000, and where the docks are situated, there were only 20 men. After quoting the number of firemen in continental cities, which were much greater than ours, he proceeded to consider the effect upon the men of constant laborious work, quoting various statistics to show the amount of sickness and injuries that existed.

All these questions will be dealt with in the Report of this Committee, which we shall look forward to with great interest.

There is now announced by Messrs. C. & E. Layton as being nearly ready for publication a work by Captain Shaw, Chief of the Metropolitan Fire Brigade : *Fire Protection : a Complete Manual of the Organization, Machinery, Discipline, and General Working of the Fire Brigade of London ;* wherein is described in detail the whole of the appliances in use, together with the system of training the men, and the gen. man.

of the Brigade. We regret we have not had the benefit of this work in preparing some of the preceding art.

Those who desire to be informed of the decisions in regard to cases which have arisen under the provisions of the Building Acts, may consult Mr. Bunyon's *Law of Fire Ins.*, chap. xii. [BUILDING ACTS.] [CORONERS.] [DAMAGE.] [DANGEROUS TRADES.] [DESTRUCTION OF BUILDINGS TO STOP FIRE.] [DOCKS.] [EXPLOSIONS.] [EXPLOSIVE SUBSTANCES.] [FIRE BRIGADES.] [FIRE EXTINGUISHMENT.] [FIRE EXTINGUISHMENT, EXPENSES OF.] [FIREPLACES.] [FIRES, CAUSES OF.] [GUNPOWDER.] [MINERAL OILS.] [PETROLEUM.] [SALVAGE CORPS.] [SPONTANEOUS IGNITION.] [WATER SUPPLY.]

END OF VOL. III.

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